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MILK-SICKNESS.

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LAST year, after a long and unavailing search, I had concluded that this malady no longer prevailed on the American continent. But recent events have thoroughly undeceived me; and having unwittingly misled the editor of the *Veterinary Journal*,* it is only right that I should now place the matter in its true light, according to my present information. Professor Kerr testifies to the prevalence of *Milk-sickness* every summer in the mountains of the Blue Ridge, which runs down the western portion of North Carolina. Dr. Salmon, a veterinary graduate of Cornell University, and now lecturer in the University of Georgia, speaks of its prevalence among the same hills farther south. Drs. Phillips and Schmidt are acquainted with the disease as existing on the upper waters of the Scioto, Ohio; and, finally, Mr. Beardsley, a very intelligent student from Illinois, has frequently seen the affection in that and adjacent States.

Another *raison d'être* of this communication, is to be found in the idea that the malady is identical with *Malignant An-*

* See the *Veterinary Journal* for June, p. 432.

thrax,—a doctrine first enunciated by Heusinger, and adopted by many others. There is some ground for this opinion in certain records of alleged *Milk-sickness* that have found their way into the medical papers; but a full consideration of the subject will show, clearly enough, that in these instances the narrators have been mistaken, and have described the one disease under the name of the other. The two maladies agree in having their origin in malarious or unimproved lands, in their communicability to the majority of warm-blooded animals, in their being transmitted only by contagion, and in the fact that both have vegetable organisms in the blood; but they differ widely in their local manifestations, in the rapidity of their progress, and in the permanence of their evil effects. *Malignant Anthrax*, when implanted in a new system, may give rise to any one of the varied forms of that disease; whereas *Milk-sickness* produces *Milk-sickness* alone, and never *Gloss-anthrax*, *Pharyngeal-anthrax*, *Enteric-anthrax*, *Hæmorrhoidal-anthrax*, *Splenic-anthrax*, *Malignant Pustule*, *Black-quarter*, etc. As surely as the *Intestinal Fever of swine* and *Texas Fever* are distinct from *Malignant Anthrax*, though habitually confounded with it in the past, so surely is *Milk-sickness* a distinct and altogether independent disease.

Etiology.

There is no uniform geological condition in the different unhealthy districts to account for their dangerous tendencies. Dr. Phillips says: "It is found in localities among the Green River hills in Kentucky, it occurs in some localities along the Wabash River in Indiana, as well as here and there in our own heavily timbered uplands in north-western Ohio." And yet a constant condition of its prevalence is the unreclaimed state of the land on which it appears. In the Carolinas and Georgia it is found only on the highest mountains; and in Kentucky, Ohio, Indiana, and Illinois, only on the heavily timbered lands or marshy river bottoms in their virgin condition. But the removal of the primeval forest, the drying of marshy spots, and the general cultivation of the soil, is the signal for its disappearance; and thus Dr. Phillips again remarks: "In many localities

where it formerly prevailed to a dangerous extent within the memory of the present generation, as in Green and Madison counties, in the State of Ohio, it has now, by reason of the cultivation of the soil, been entirely exterminated. Indeed, the disease may be said to be rapidly disappearing before our extending civilization."

His next statement must be received *cum grano salis* :— "Infected localities are found to be uninfluenced by the quality of soil or state of drainage; whether the soil is underlaid by rocks of lime, sand, or clay; whether watered only by surface ponds, or by pure running springs or brooks. It prevails equally in malarious and in non-malarious districts. It is even yet met with in small infected localities in some of the hilly counties of southern Indiana, and in Kentucky, where Ague either never was, or has long since disappeared." Now, here it must be insisted upon that all malarious emanations do not produce the same disease. We all know how thoroughly *Malignant Anthrax* has become genetically associated with marshes and rich soils overlaying an impervious subsoil. Yet, from where I sit, I can see in the distance a marsh of over 1,000 acres, which proves a hotbed of Ague for the human being, but upon which the domestic animals graze with the most perfect impunity. On a visit some years ago to the timber lands of Maine, I was struck with the extended marshes on the newly cleared ground, and no less with the fact that Ague was unknown. The rich damp soils bordering on the Gulf of Mexico are believed by the inhabitants to be most salubrious, yet they infallibly develope *Texas Fever* in strange cattle, though not necessarily *Anthrax* nor *Milk-sickness*. Whatever may be said of Ague, these enzoötics are by no means necessary concomitants of marshes; but when introduced into a locality, their permanence is directly dependent on the nature of the soil and the imperfection of the drainage, and they may be thoroughly eradicated by cultivation and improvement. Dr. Phillips himself affirms this, when he says that "nothing but the clearing off the timber and the cultivation of the soil is known to exterminate it." Now, it can be safely affirmed that no matter what the general character of any soil or subsoil, there are usually found circumscribed beds of clay or other impervious

material that will retain moisture and generate malaria in the unimproved state of the district. But in the *Milk-sick* localities the retentive nature of the soil is usually remarked upon. Thus the Blue Ridge in the Carolinas is formed mainly of crystalline granite rock, set on edge with a slight inclination eastward, and thus forming circumscribed flattened plateaux or basins, in which the water is often confined.* So it is with all the other infected localities: they are rich, unbroken lands, more or less dotted with marshy spots, or overflowed by rivers; and the best proof that these conditions are essential to the preservation of the poison, is that it is never found to exist in the soil apart from them.

Again, this agrees with other diseases of a malarious origin, in showing itself only after the soil has dried out in late summer and autumn. This is the universal testimony; and although Dr. Phillips says he attended a well-defined and fatal case during the intense cold of the winter of 1868, it must be borne in mind that this was in the human subject and derived from the infected animal product,—not from the infected locality.

Many have attributed the disease to the ingestion of poisonous plants, and notably to the *Eupatorium Ageratoides* and *Rhus Toxicodendron;* some, indeed, allege that they have produced the disease at will, by feeding with the latter plant, and allowed a recovery by withholding it. This would account for the prevalence of the malady mainly in wild lands and at particular seasons when the plants were at a particular stage of their growth. But it fails utterly to account for the fact that the poison is manifestly reproduced and multiplied in the animal system, and that the smallest quantity of diseased flesh or milk may infect fatally. These plants, too, exist abundantly in the other States, where *Milk-sickness* is absolutely unknown. Others have attributed the disease to mineral impregnations of the drinking water or food; and cobalt has acquired a bad reputation in this respect. But the arguments against its origin in phanerogamous plants are equally conclusive here; as no mineral

* Dr. Schmidt, writing on May 1st, says: "It is not common at this time of the year, nor until water and food get more scarce; then it will be plentiful in low swampy places, as it is never known on high (dry?) land."

could be multiplied in the system or animal products, so as to determine more deadly results in the second subject than in the animal from which it was derived. If, then, the disease has been produced by giving thoroughwort, poison oak, or cobalt waters, it is because these agents contained its specific germ as an accident, and not as an essential element.

The recent microscopic observations of Dr. Phillips have done more to elucidate the cause of *Milk-sickness*, than all the wild hypotheses and crude observations of a century before. He has found vegetable organisms in the blood; and as these will explain fully all the peculiarities of the disease, they may be provisionally accepted as the probable *disease germs*. He says: "In the month of June last, I had under my care a typical case of *Milk-sickness*. I made a careful microscopical examination of the urine every day; and upon the fourth day after the case came under my care, I drew a few drachms of blood, and immediately placed it under the microscope at the bedside, while yet warm and liquid. I found it contained a great number of living, moving spiral bacteria, similar in their general appearance to those spiral bacteria described by Professor Lebert as abounding in the blood of Relapsing Fever patients. I also found in the urine of that patient those same spiral bacteria, and co-existing with them, the sphero-bacteria, in segments of two to six or eight. I had opportunity to examine the blood of but one patient; the urine of several was obtained and examined, furnished from patients under the care of one of my professional neighbours—all showing the presence of both these described forms of bacteria. I sent specimens of the blood and urine to a professional friend, having a State reputation as a microscopist and pathologist, and had the pleasure of receiving, within a few days, a full endorsement of my observations."*

This will sufficiently account for the fact that particular districts, fields, woods, waters, or plants are at times found to be infecting; while the same plants or waters, containing identical chemical elements, are at other times or places innocuous. It will further explain why only a certain proportion of the animals

* It ought to be stated that Dr. Schmidt denies the existence of bacteria in the blood of his cases.

or men exposed to the morbid influence succumb to it; while the remainder, whose systems or vital fluids are in a condition chemically incompatible with the propagation of the bacteria, escape. It is quite in keeping with the fact that the disease is produced in widely different conditions of climate, vegetation, soil, geological formation, and management; and that no combination of these is able to produce it, unless the disease germ has been introduced. It explains, too, the permanent preservation of the virus in cheese and other comparatively stable products of the sick. It is equally in keeping with the following circumstances, relating to what may be considered predisposing causes of the disease:—

The excess of effete matters in the blood evidently favours its development. Thus, overwork, severe exertion—even for a limited time, want of sleep (as in the case of the members of a family watching with a sick relation), a fit of constipation, or a slight attack of malarial fever,—all strongly conduce to the development of the malady. It is curious to note that children often suffer less than adults, probably because their emunctories are usually more free, and they are less exposed to exhausting and depressing conditions. In infected cattle, the symptoms are easily developed or aggravated by subjecting them to fatigue; and in *Milk-sick* districts, it is a common practice to test the soundness of stock by giving a good run before purchasing.

Another very remarkable fact is, that milch cows rarely show the disease, though conveying it to other animals through their milk. Dr. Phillips says: "It is not unusual, where persons suffer from this disease, to find, at the same time, calves using the same cow's milk, sick with '*trembles*'; while the cows are to all appearance in perfect health. The dry cattle are much more frequently attacked with 'trembles' than cows which are secreting milk in abundance." To the same purpose Dr. Schmidt remarks: "Cows giving milk do not show the disease at all, but their calves have it all the time as long as they suck the milk; dogs fed on milk get it." His opinion, as stated further on, is that all the poison passes into the milk, and thus the cow gets rid of the effects on her own system. This is probably the explanation of the immunity shown by Dr. Graff's sow, which was fed for a fort-

night on poisonous flesh that had killed dogs. If at the time secreting milk, she would naturally escape. Or she might be merely an insusceptibe subject at the period of the experiment. At least, our modern authorities will allow no such exemption for the pig. Dr. Phillips says: "A calf gets it from the cow, in the milk,—the calf dies; and the pigs which eat the carcase get the disease and die; the dog which eats the pig, and the buzzard which eats the dog, all in due time contract the same disease." Dr. Schmidt and others speak in similar terms.

This transmission of the disease through a long series of successive victims, which has been shown in "scores of careful observations," demonstrates the important fact of the specific nature of the poison and its multiplication within the system; while any simple mineral or vegetable poison in similar circumstances, would soon have been rendered inert by dilution.

As might be inferred from the name, the disease is generally caused in man by the use of the milk. Phillips says that "people rarely contract the disease from the use of butter or beef," founding his opinion on the general sale of these articles produced in infecting localities, and the rare occurrence of Milk-sickness among the consumers. Dr. Schmidt is of a different opinion, and says: "I am certain that if the physician's attention were drawn to it in your large cities, and if every case of obstruction of the bowels, with vomiting, were closely watched, it would not be put on the register as inflammation of the bowels, or obstruction of the bowels; for I am certain you often see it, but it goes for something else. . . . Look for it in the fall, and even winter, as I have had cases, two or three here, in January 1871 and 1873." This is in keeping with Dr. Graff's views: he remarked, forty years ago, that hundreds of men died yearly of this affection in the Western and South-western States.

Dr. Schmidt thinks he has proved that the poison resides mainly, or exclusively, in the cream and butter. "I have experimented often in the last ten years, and found that the poison is in the cream and butter. I had calves to be given skimmed milk, without result; then had the same calves to suck the milk from the cow, and they soon had the disease; gave the dog the same milk, and he soon had it." He goes on

to instance a number of cases in which families had been infected by the butter; in which an abstinence from milk and butter had subsequently protected for years; and in which the giving way of a single individual to the strong craving for butter again brought on the disease.

But there is reason to believe that neither milk nor butter is essential to the development of the malady in man, but that the human being contracts the affection just as do cows and other animals. Dr. Phillips adduces cases in which the patient denied having used either milk, butter, cheese, or fresh meat for months prior to the attack. Mr. Beardsley, too, was acquainted with wells in the woods that had the general reputation of producing *Milk-sickness* in man or beast that drank from them.

The presumption is, that all races of domestic animals are susceptible, and may contract the disease, either from the milk, flesh, or other products of the sick, or directly from ingestion of the poison in food and water. Phillips even suggests the air as a possible medium of infection, but adduces no facts in support of the opinion.

Symptoms.

In *milch cows*, these may be so slight that they are entirely overlooked unless the animal is excited. The outlet for the poison through the mammary secretion appears to protect these, in a great measure, from the graver phenomena. When violently excited, however, and especially when driven fast for some miles, they are seized with a rigor and all the more dangerous symptoms of the disease. The breath, too, has at all times that fœtid, sweet, mawkish smell which characterises the disease in all animals.

In *steers*, and other *dry cattle* and *sheep*, the condition is characteristic, even in decubitus: a position which is maintained by the animal as much as possible, evidently because of the great nervous prostration and extreme muscular weakness. The head resting on the ground, the sweetness of the breath, the bloodshot eyes and the staring coat, are marked features, though appetite and rumination may be preserved. The worst cases

lie prone, with head extended on the ground, and show an utter indifference to all sense of fear or danger; and the wildest of them whine under the prostrating influences of the disease, and allow themselves to be handled in any way without the slightest effort at resistance or escape. The nervous debility and torpor are not confined to the voluntary muscles, but all the organic functions are largely impaired, the bowels in particular are obstinately constipated, and when death ensues it is by asthenia.

The milder cases, those even that present no appreciable symptoms when at rest, are seized with trembling when made to undergo the slightest exertion, assume a very haggard appearance, drag their limbs slowly and stiffly, and after a drive of four or five miles will often suddenly drop down dead.

The prostration is even more marked in sheep, and in very many cases they seem to be quite unequal to the task of rising.

In vomiting animals, emesis is a prominent symptom. *Calves* tremble while sucking, and often stop suddenly, eject the contents of their stomachs, fall to the ground, and perish. In *pigs* and *dogs*, vomiting and constipation are prominent symptoms; swine burrow under their litter, and are roused with difficulty, and dogs get "the slows," and are unable to follow their master. The result of exertion is the same in all.

Symptoms in Man.—In the human being, the disease has been more carefully studied. "The first symptoms usually manifested are feelings of languor, with muscular weakness, and an unusual sense of fatigue, aversion to food, nausea, and vomiting. The patient soon seeks a recumbent posture, and the disease is rapidly developed. On examination the following objective symptoms are noticed: The pulse not much disturbed, occasionally increased to 80 or 90, but generally slower than normal, and soft; the heart and large arteries apparently moved by an impulse greater than normal, as if to overcome the loss of tone in the arterioles and capillary vessels, which are somewhat engorged, as indicated by the flushed, or rather bronzed, and dirty appearance of the skin,—which is never blanched nor cyanitic, as in pernicious fever. The surface is not increased in temperature, but rather diminished. The temperature as

indicated by the thermometer is usually below 100°, sometimes not above normal. The condition of the skin is dry, the respirations are deep, and suggestive of one labouring from a sense of fatigue.

"The breath is fœtid and of a peculiar odour; the stomach and bowels are apparently empty. The abdomen retracted so that the abdominal aorta is usually seen and felt pulsating, so as to attract the attention of the patient and nurse; there is a complete cessation of peristaltic movement, and resulting constipation; the tongue is relaxed, large, and soft, with a dirty-looking umber-coloured coat upon it.

"All the secretions and excretions are rapidly diminished; only the tongue remains moist, from excessive nausea and efforts at emesis. The urine is rarely voided, except at the request of the medical attendant or nurse, and then in diminished quantity, clear and limpid, and generally below the normal specific gravity; it rarely deposits a sediment. The countenance has an apathetic expression. The mind is occasionally irritable, but generally in a state of hebetude expressive of utter indifference or *abandon;* delirium is a rare symptom. The appearance is usually somnolent, but he rarely has a profound sleep.

"This remarkable condition usually increases from day to day, the muscular weakness daily increasing, until the patient cannot command the energy of will or power of muscle to raise his head or hand, or even protrude his tongue, upon your most urgent bidding.

"The vomiting persists, ejecting everything that is swallowed. The prostration increases; soon the eyes remain open, the cornea and conjunctiva become dry, the process of winking being no longer performed. The patient is generally intolerant of any covering, especially upon his extremities; he is oblivious to all sense of indelicacy; the decubitus is peculiar, indicating a preference for that position that brings the greatest surface of the body upon the bed for support, the head in the most dependent position, preferably hanging over the edge of the bed. Thus from day to day he suffers, and becomes gradually more oblivious to all surroundings. From a state of stupor he

gradually passes into a state of coma more or less profound. The vital functions of respiration and circulation become gradually weaker. Stasis in the capillary circulation ensues—first in the brain, the viscera, and then in the extremities; and thus the weakened heart, unable longer to keep in motion the increasing volume of nearly stagnant blood, gradually ceases its movements. In the same manner a failure of all the vital forces ensues, and death steals over the unfortunate victim without a struggle.

"There are some cases that run an exceedingly mild course, being characterized only by a few days of debility, loss of appetite, and nausea, with a gradual restoration. Others, like the fulminant form of cerebro-spinal Meningitis, completely overwhelm the subject, and death by coma ensues within one or two days from its commencement. Ordinarily, from ten to twelve days are required from the period of invasion to the period of convalescence.

"Convalescence in this disease is as peculiar as any other feature in its clinical history; and to this peculiarity I would invite especial attention, inasmuch as these facts are important in the study of its special pathology. Convalescence is rarely marked by a critical evacuation of any kind. I have no recollection, in any case, of a critical perspiration to mark the initiation of convalescence. A moist skin during the active stage of this disease, in my opinion, never occurs. Diuresis, or Diarrhœa, as a rule, does not occur as a critical discharge. It is true, a resumption of these functions occurs, but not in quantities to be regarded as critical. I have occasionally seen Diarrhœa occur as a sequel, with Typhoid symptoms; but I have always regarded it as a result of injuries inflicted by the injudicious use of drastic purgatives, or as an evidence of uræmic poisoning from retained excreta. Ordinarily, convalescence is marked by a cessation of the characteristic symptoms, and a gradual resumption of the impaired and suspended functions,—only this and nothing more. There is a popular belief that a patient once suffering from this disease never fully recovers; and that, upon exposure to heat and fatigue, he is liable to a relapse. This, it is true, does occur occasionally, but

not as a rule. On the contrary, I could point to scores of cases where recovery has been perfect and complete." (Dr. Phillips.)

Mr. Beardsley also testifies to the permanency of the effects, and liability to relapse in many cases.

Lesions in Cattle.

Beside the presence of fungi in the blood, and the tendency to capillary stasis in different organs, the following have been noticed:—"The stomach and intestines are inflamed (?); the mucous coat is measurably destroyed; the entire coats are in some cases gangrenous; they have a dark or black appearance, which is not due to a mere congestion; the coats are not firm, though they are not easily broken down. In the ventriculus, or paunch, and indeed throughout the whole alimentary canal, is found a substance conglomerated and resembling cemented sawdust, in the shape of balls, somewhat elongated, and perfectly adherent to the coats of the digestive tubes." (Dr. Schmidt.)

Pathology.

To any one who has intelligently followed the above description, it must be abundantly evident that this affection is essentially distinct from *Malignant Anthrax*. Though, like that malady, it is enzoötic in malarious localities, and is communicable by ingestion of the morbid products of the diseased, and though bacteria are present in the vital fluids, it is in no respect interchangeable with that, and never gives rise to *Malignant Pustule*, *Black-quarter*, *Splenic Apoplexy*, etc. On the contrary, it is a notorious fact that in *Milk-sick* men and beasts alike, enlarged spleen is never observed; and thus physicians are able to demonstrate its essential difference from all other forms of malarious fever. It has, moreover, a period of incubation, varying, it is true, from a few days to as many weeks or even months, yet presenting a regularity that is not observed in the genuine *Malignant Anthrax*. Then the *Milk-sickness* virus expends its energy on the great nerve centres, and the most prominent symptoms are those of asthenia, muscular weakness, torpid bowels, and impaired functions generally. Though capillary stasis occurs, there is not the gelatiniform nor bloody

extravasation, nor the extensive sloughs, by which Anthrax is characterized. The disease is slower and more regular in its progress, and is, on the whole, more amenable to treatment, than the general forms of Anthrax.

It is manifestly equally distinct from the different malarial fevers. It shows no periodicity in man nor beast; it does not lead to increased body temperature, nor to enlargement of the spleen or other blood glands; it is communicable from one subject to another in a way that malarial fevers in general are not, and it is in no degree controlled by quinia or other anti-periodics.

The whole morbid phenomena point to the introduction of a poison capable of proliferation in the animal system, and of transmission from system to system,—a poison which expends its power mainly on the nervous centres, particularly those of the sympathetic system, and paralyses all the various vital functions, even to those of circulation and nutrition. Even tissue-waste is arrested, as shown by the small quantity and low density of the urine, and the absence of urea in the blood. The poison is probably concentrated in the alimentary canal, making up a large part of those firm masses described by Dr. Schmidt; but it also exists in the blood, as witnessed by its propagation through the flesh and milk. One attack affords no immunity from a second, but rather predisposes to it; and though apparent recoveries will take place as early as twenty-four hours from the onset, it is evident that such are but improvements, and that the poison is not entirely eliminated or destroyed, as any over-exertion will cause a relapse with all the violence of the first attack.

I hope during the present summer to obtain specimens of the virulent products, and may be able hereafter to speak more definitely as to the pathology of the disease. Meanwhile I prefer to submit these facts only, as bearing on the subject.

Treatment.

With my present readers, this can hardly possess sufficient interest to warrant a full consideration. By some, purgatives have been used heroically, as many as seventy-five large and

powerful doses of physic having been given (and retained) in twice that number of hours, together with a great many large and active enemata. Others, looking on such measures as probably more hurtful than beneficial, have sought to stimulate the nervous system by strychnine, and the vaso-motor system especially by belladonna, while they allayed thirst and solicited the action of the kidneys by citrate of magnesia, nitrate of cerium, or bitartrate of potash. Still others claim a constant success from five or ten grain doses of calomel, repeated four times in twenty-four hours, and ice placed in the mouth to allay the thirst. All acknowledge the value of a free use of brandy or whisky as a stimulant, in cases in which it can be retained, though the vomiting often renders it impossible to avail oneself of these agents. It does not seem to have occurred to any one to try the effect of such agents as the sulphites, iodides, chromates, carbolic acid, and the like, in destroying the poison or setting a limit to its increase.

CHRONIC DIURESIS.

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THIS is a disease which I know very little about practically, and I have not been fortunate enough to find anything written upon it of much importance, because I have not, for several years past, been within reach of a good medical library. From conversations with other veterinary surgeons, I am led to believe that the disease is not very uncommon among horses; and it is with a view to elicit knowledge from such as are able to instruct, that I submit the following case which occurred in my own practice, with a few remarks, for consideration and discussion.

Professor Williams's book is by far the best work we possess on the *Principles and Practice of Veterinary Medicine.* He has a chapter in it on *Polyuria*—in which he states: "The intrinsic causes are those originating in defective assimilation, or rapid

* Read at the meeting of the Yorkshire Veterinary Medical Society on July 11th.

tissue metamorphosis—owing to the actual presence of the glandous poison, and to a condition of the system tending to its development: the polyuria being induced by the action upon the kidneys of those constituents, products of tissue change, which are naturally eliminated by them." But further on he says: "The urine is of a very pale colour, sometimes as clear as clean water, and has a specific gravity little higher than distilled water, the specific gravity of which is 100; whilst that of diabetic urine is from 100·2 to 100·3, and that of healthy urine in the horse ranges from 100·30 to 100·50."

The latter quotation is not consistent with the former—for how could the specific gravity of the urine be *reduced* so much by an increase of the products of tissue change, which are naturally eliminated by the kidneys? Is it probable that an increase of urea would cause an increase of water in a far *larger* proportion? I do not believe it. I would respectfully ask the eminent Professor to reconsider this chapter, for it seems to me that he has confounded *Azoturia* or *Polyuria* with *Hydruria*. These are several forms of Diuresis or Diabetes Insipidus, and it is of no small importance to recognise their essential differences.

The remark made by Professor Williams in the above quotation, on the relation that sometimes exists between Glander Poison and Polyuria—as cause and effect—is of the highest interest to us. He says before that, "When induced by no traceable cause, and where change of diet has no effect in checking it, the disease (Polyuria) is generally premonitory to Farcy or Glanders, and is symptomatic of the breaking up of the tissues of the body." In his chapter on Glanders and Farcy, page 192, he also writes: "The most common forerunner of Glanders, more particularly of that form of it known as Farcy, is the disease commonly called Diabetes Insipidus or Polyuria. It cannot be said that in Diabetes there is any obstruction to the excretion of degraded tissue; indeed, the reverse is the case—excretion of urine being enormously increased. If we look deeper into the matter, we shall, however, see that the Polyuria is but a result of rapid tissue changes, rapid emaciation of the body being a most prominent symptom, with debility arising

from degradation of tissue, and from the presence of the degraded materials within the circulatory fluid. So apparent is this condition, that it has been truly said that Diabetes, when arising from no cognisable cause, is indicative of a general breaking-up of the constitution."

It is this relation between Diabetes Insipidus or Polyuria and Glanders, that commands our earnest attention. Though I have no experience to prove it, I find good reason to believe that it is true. But is it true in respect to *every form* of Diabetes Insipidus? I think not. I believe it is true only in respect to those cases in which there is an increased elimination of the products of tissue change by the kidney. There is a sentence in the above quotation, which shows that when he wrote it Professor Williams did not recognise the fact, that an increased discharge of *urine* does not necessarily imply an increased elimination of *urea*. The sentence is this: "It cannot be said that in Diabetes there is any obstruction to the excretion of degraded tissue; indeed, the reverse is the case—excretion of urine being enormously increased." Now, I am sure that he will allow that there must be an enormous increase of urine excreted, without any increase of degraded tissue products. When I read that passage first, I was disposed to think it was a misprint of *urine* for *urea*, but I failed to find the important difference recognised by him elsewhere in treating the subject.

Polyuria is generally understood to mean much-*urea* rather than much-*urine;* and is synonymous with Azoturia, a species of Diabetes Insipidus. Hydruria is another species of the same class. Now, if Polyuria, and not Hydruria, is that which so commonly precedes Glanders, like a herald to warn us of the enemy coming, it is well we should know it. The herald should give no uncertain sound: such a misunderstanding might lead us to very serious consequences, and ruin the reputation of a young practitioner. We cannot be too precise in our knowledge of every symptom that may be called "suspicious" of Glanders.

There are two forms of Diabetes. *A.* Urine increased in quantity, containing an abnormal constituent—sugar; the specific gravity increased: *Diabetes Mellitus. B.* Urine increased in quantity, containing no abnormal constituent; specific

gravity may be either above or below normal: *Diabetes Insipidus.*

There are three essentially distinct forms or species of Diabetes Insipidus. Dr. Willis has thus named them :—

A. HYDRURIA. Water in excess. "Solid matters in their due proportion to each other, but in a very small ratio to the water" (Watson). Specific gravity low.

B. AZOTURIA ; *synon.*, POLYURIA. "A condition in which a larger quantity of urine than natural is secreted, containing an absolute and relative increase of urea" (Tanner). Specific gravity high ; and on that account Dr. Watson says it is apt to be mistaken for Diabetes Mellitus.

C. ANAZOTURIA. Excess of water, with an absolute and relative decrease of urea. Specific gravity low.

The case which I shall presently bring to your notice illustrates the species Hydruria. But first allow me to call your attention to a remarkable case of this disease recorded by Dr. Watson in his "Lectures on the Principles and Practice of Physic," vol. ii. p. 738; and with your permission I will here quote some of Dr. Watson's own remarks. "I have mentioned my hospital example because it afforded me a proof that liquid may be absorbed into the body from the atmosphere, either by the external skin, or by the pulmonary mucous membrane, or by both these surfaces. Dr. Prout, to whom I showed both the urine and the patient, advised that, for a time, his supply of drink should be limited. Accordingly, very much to the poor boy's sorrow, he was put upon an allowance of a pint and a half. I have no doubt that my injunctions were strictly observed, both by himself and by the nurses. Nevertheless, without losing flesh or weight, he passed during the corresponding twenty-four hours ten pints and a half of urine.

"I got evidence of the same fact in another way also: namely, by weighing the boy at short intervals; although the experiment was not repeated so often as I wish it had been. I give you the results of one of these trials.

"Immediately after he had emptied his bladder, he was found to weigh 3 st. 8 lb. 3 dr. Three hours subsequently, having taken nothing in the interim, he weighed 3 st. 9 lb. 2 dr. Then

he voided 16 oz. of urine, after which his weight was again 3 st. 8 lb. 3 dr. : so that he must have imbibed about a pound of liquid in that brief space of time.

"This boy lived more than two years afterwards, and continued to void an excessive quantity of pale, neutral urine, scarcely heavier than distilled water. After death, scrofulous tubercles were found in his brain and in his lungs. His kidneys were gorged with venous blood, but of healthy structure. There was nothing wrong, apparently, in his organs of digestion."

Perhaps some who identify Tuberculosis with Glanders, will conclude, from Dr. Watson's case, that Hydruria, as well as Azoturia, prognosticates that fell disease. But we should not conclude hastily, nor be led by our theories alone in such serious matters. "One swallow does not make a summer." There are several symptoms very common in Glanders, but they are far from being characteristic of the disease, or in any way "suspicious" of it. The reason why we know so little of the real nature of Glanders —why the symptoms of it are so often mistaken—is, I think, because it has been associated in our minds too much with other comparatively innocent diseases. We are so much afraid of the disease itself, that we often condemn others for being remotely like it. I know that army horses have been destroyed on mere "suspicion" of Glanders. In the year 1876, the Staff Veterinary Surgeon at an important station recommended a "lazaretto" to be built for four horses, where "suspicious" cases of Glanders might be kept apart from all other horses; but the "authorities" refused to sanction it, on the plea that it was better to destroy at once all cases with symptoms suspicious of Glanders, than to keep them under observation in a lazaretto!

Dr. Watson, in the lecture above quoted from, says: "For many years of my professional life I had not met with an instance of what has been termed *Diabetes Insipidus;* from which I infer the rarity of that disorder. I shall use the term *Chronic Diuresis* to express this affection."

Dr. Aitken, in his larger work on the "Science and Practice of Medicine," second edition, does not even mention this disease. As Tuberculosis is one of the most common diseases in England, we may therefore conclude that it has but a very

remote relationship, if any, to Diabetes Insipidus or Chronic Diuresis.

But I am told that Chronic Diuresis is rather a common disease among horses in this country: if so, those veterinary surgeons who are familiar with it ought to be able to tell us positively what value it has as a prognostic sign of Glanders; and those who learn by experience and observation ought to know, if they have had many such cases, which *form* of the disease is related to Glanders and which is not.

The case which I shall now call your attention to is negative in respect to Glanders: it is a case of *Hydruria*, and is of interest chiefly in respect to treatment.

Dec. 24, 1875.—No. 72, grey (draught) mare, aged 12, of No. 3 Compy., A. S. Corps. Came to this station from Dublin, with the company, on the 15th inst. She is in a very low condition, and looks unhealthy. On inquiry, I find that she has suffered from inordinate thirst, and frequent passing of large quantities of clear urine, with voracious appetite, eating all her bedding, etc., for at least three months past—that is, since the present driver has been in charge of her. There is further evidence to prove that she has been so, more or less, for a much longer time—probably for over two years, according to the farrier surgeon's recollection; but she has never been under any medical treatment for it. She worked well, and kept in a fair condition until about two months ago, when she was put to extra work; and then she began to waste away rapidly. She has been a bad crib-biter for a long time; I cannot find out how long. Pulse 40; respiration 9.

Let her be admitted to the infirmary stable for observation. Rest from all work; exercise for two hours daily—walking. Diet: oats, 12 lb., hay, 14 lb., daily,—that is, 2 lb. hay extra over the usual allowance to heavy draught horses, A. S. Corps.

Dec. 31.—The quantity of urine voided in twenty-four hours cannot be ascertained; but whenever she goes to the trough she drinks very freely, and in five or ten minutes afterwards she passes a large quantity of urine just as clear as the water she drank, and free from smell. Specific gravity 2. After standing twenty-four hours there is a slight deposit from the urine of

carbonate, phosphate, and the oxalate of lime,—the former most and the latter least in quantity. Bowels act well. She used to sweat profusely at work. The skin is "hide-bound," and feels thick and stiff; there is a peculiarly disagreeable smell from it after exercise. The eyes have a wretched, disheartened expression. She seldom lies down, but often falls down in her sleep. It cannot be traced to any direct cause, such as inferior diet. Prognosis very unfavourable, considering how long the disease has existed, and the present very low condition of the patient. I do not know of any medicine that might be given with confidence of success. Staff Veterinary Surgeon Gudgin has seen the case with me, and he says that he has known some very bad cases recover by drinking the saturated solution of yellow clay, though not so bad a case as this. He has great confidence in that remedy. Col. Fitzwygram also, in his "Horses and Stables," says that "clay mixed with the water given to drink sometimes acts most beneficially." He says, moreover, that if not relieved, it "often brings on such a deteriorated state of the system that Glanders supervenes."

Let the clay-water treatment be adopted. Mix a quantity of yellow clay with water; and after the insoluble part has been deposited, give the solution to the mare to drink—as often, and as much of it, as she likes.

A careful man has been told off to look after this patient only, from this date: he is to measure all she drinks during the twenty-four hours, and all she urinates between 6 a.m. and 6 p.m. daily. The walking exercise to be continued; to go out immediately after urinating. Extra diet, as above.

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1875.			
Dec. 31	3	11	Between 11 a.m. and 5 p.m.—*Bucket measures 12 Quarts*, WHEN FULL.
1876.			
Jan. 1	4½	21	From 6 a.m. to 6 p.m.—Mare weighed to-day: 9¼ cwt.
2	4	20	From 6 a.m. to 5 p.m.
3	6	28	From 6 a.m. to 6 p.m., on and after this date.
4	4	24	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
Jan. 5	5	25	
6	5½	26	
7	6	27	
8	5½	27	
9	4	24	
10	4½	22	
11	4	20	
12	4	19	
13	3	11	
14	3	11	
15	3	9	
16	3	8	
17	3	8½	Weighed 10 cwt. Looks more cheerful.
18	2½	8	
19	1½	5½	
20	4	14	
21	2	8	
22	2½	8	
23	2½	8	
24	3½	8	
25	3	8	
26	2½	7	
27	3	9	
28	2½	7	
29	2½	7	
30	2½	6	
31	3½	9	Weighed 10 cwt. 10 lb.
Feb. 1	3	9	
2	3	7	
3	1	5	Extensor muscles of the right arm swollen and very tender; lameness severe. Swelling does not "pit" on pressure. Cause not known. Feeds well. Pulse 36. Fæces hard. Give aloes ʒviij. in solution. Feed on bran-mashes. By some foolish mistake on the part of the farrier, the aloes solution was not administered as a draught, but mixed with a bucketful of clay-water for the patient to drink (!), and during the day she drank nearly the whole of it. She drank nothing else.
4	3	7	
5	3	8	
6	2	7	
7	2	6	The physic purged moderately. Free from lameness. Swelling nearly disappeared. Extra diet (oats 12 lb., hay 14 lb.) from this date (7th), and usual exercise.
8	2½	8	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
Feb. 9	2	6	
10	2	6	
11	2½	6	
12	2½	7	Discontinue clay-water after to-day.
13	3	8	Common water. (*All the water we get at the Curragh is very hard.*)
14	2½	7	
15	2½	7	
16	4	24	
17	3½	18	
18	4	22	
19	3	18	
20	2½	17	Discontinue common water after this date.
21	3	12	Clay-water.
22	2½	10	
23	2½	7	Weighed 10 cwt. 1 qr.
24	2	7	
25	2	6	
26	2	6	
27	2	7	
28	2	7	
29	2½	7	
March 1	2	6	
2	2	5	
3	2	5	
4	1½	3	
5	2	4	
6	2	5	
7	2½	5	
8	2½	5	
9	2½	6	
10	2½	6	
11	2	4	
12	2	7	
13	2	4	
14	2	5	
15	1½	3	
16	1½	3	
17	2	4	
18	2	4	
19	1½	3	
20	1½	3	
21	2	4	
22	1½	3	
23	2	4	
24	2	4	
25	1½	3	
26	1½	3	
27	1½	3	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
March 28	2	4	
29	1½	3	
30	2	4	
31	2	4	
April 1	1½	3	
2	1½	3	
3	2	4	
4	1½	3	
5	1½	3	Weighed 10 cwt. 3 qr. 16 lb.
6	1½	3	
7	2	4	
8	2	4	
9	1½	3	
10	2	4	
11	2	4	
12	2	4	
13	2	4	
14	1½	3	
15	1½	3	
16	2	4	
17	1½	3	
18	2	4	
19	1½	3	
20	1½	3	
21	2	4	
22	1½	2	
23	2	4	
24	2	3	
25	2	3	
26	2	3	Discontinue clay-water after this date.
27	2	4	Common water.
28	2	3	
29	2	3	
30	2	3	
May 1	2	3	
2	1½	2	
3	3	3	
4	2	3	
5	2	3	
6	2	3	
7	2	3	Observe, that when the clay-water was discontinued on the 12th of February, the quantity of urine voided daily increased in four days from 7 to 24 quarts, while the water drunk increased only from 2½ to 4 buckets. Commence light duty to-morrow (8th). Continue drinking common water.
15	...	...	Weight, 11¼ cwt.

Date	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
May 21	...	...	Discontinue work. Resume observations to-morrow.
22	3	6	Common water continued.
23	2½	4	
24	2½	4	
25	2½	4	
26	3	4	
27	3	4	
28	3	4	In order to see whether alum will have any restraining effect, give alum sulph. ʒss daily, dissolved in the first bucketful of common water every morning, from this date inclusive.
29	3	4	
30	3	4	
31	3	4	
June 1	2½	4	
2	4	7	
3	4	8	Give the alum ʒss twice daily, from this date inclusive.
4	3½	7	
5	5½	18	
6	5½	20	
7	5½	20	Discontinue the alum after this date.
8	5½	20	
9	3½	16	Discontinue common water after this date.
10	3½	16	Clay-water.
11	3½	16	
12	3½	16	
13	3½	8	
14	2½	8	
15	4	10	
16	3	9	
17	2½	7	
18	2½	8	
19	2½	6	
20	...	...	The attendant has been removed for other duties; no other trustworthy man can be spared for such exclusive work. The mare is also required for duty. She is therefore discharged for heavy draught work. Diet ordinary, oats 12 lb., hay 12 lb., daily. To have clay-water always to drink.

Probably the observations, imperfect as they are, have been carried on long enough; though whatever value they have

depends entirely upon the length of time over which they have been extended, and that all the more because they are imperfect. They are imperfect, 1st, because I have no absolute proof that the quantities reported are correct: in fact, they are not better than fair approximations. The drink was given in buckets. When the man reported that the mare drank 3½ bucketsful, that meant it was nearer, as far as he could judge, to 3½ than to 3 or to 4. The urine was received into a "blood-can" graduated into quarts, and he reported to which line the urine stood nearest on the level. These are rough measurements for scientific requirements, but I always thought that if I imposed upon my assistants the task of exact measurements, I could not rely so well upon them. These observations would have been perfectly useless if they had been for a short period only; but considering the long time over which they have been carried on regularly, the errors above and below the quantities recorded correct each other to a great extent, if not entirely, so that we may accept these measurements as reliable approximations for practical deductions. 2nd. But a more serious imperfection arises from the circumstances which prevented any account being taken of the urine passed during the dark twelve hours—from 6 p.m. to 6 a.m. 3rd. The influence of the changes of weather upon the skin is another missing link required in exactly balancing the amount of water drunk and urine passed.

The solution of yellow clay seems to have had much influence for good in this case; but I do not know its mode of action. Is it simply in checking thirst? Is it by some soothing effect upon the digestive organs? Does it assist directly or indirectly the assimilation of food?

The solution of alum did harm: it increased the thirst from 3 buckets to 5½, and the quantity of urine from 4 to 20 quarts —or, to put it in other words, the alum nearly doubled the thirst, and it multiplied the urine by five. These proportions are remarkable.

The patient has not yet (date of discharge) recovered from the disturbing influence of the alum; for when the alum was first given the measurements were—drink, 3 buckets, urine,

4 quarts; but now the proportions are—drink, 2½ buckets, urine, 6 quarts.

I shall now ask you to remember the condition and general symptoms of the mare when she was first admitted, and then observe the following remarks:—

1. Weight increased 2 cwt. (from 9¾ to 11¾ cwt.).

2. The skin now feels and looks healthy; she does not perspire abnormally at work, and there is no bad or disagreeable smell from the skin.

3. She is in good spirits—looks cheerful. She gradually left off falling down in her sleep; she lies down at night now regularly. I wonder why she was so unwilling to lie down when she was so weak. Was it because the liver or some other internal organ was congested and tender, causing pain when the body rested on the ground?

4. She gradually left off eating the litter.

5. But the most remarkable thing, perhaps, is, that she gradually left off the habit of crib-biting. She has not been observed to do it for several weeks past, though carefully watched.

6. The urine is of a normal colour, with normal deposits. Specific gravity ·25.

Addenda.

In order to see whether the mare continued well, she was taken into the Infirmary stables, and the observations resumed again on the 16th January, 1877. Since last report she has been at work constantly in heavy draught, and during the past two months she has been drinking common water. She has not been seen to crib-bite since the above report.

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1877.			
Jan. 16	3	10	Urine normal colour; sp. gr. ·12. Drinks common water.
17	2½	14	Weighed 11 cwt. 1 qr. 2 lb.
18	3	10	
19	2½	9	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1877.			
Jan. 20	2½	7	
21	3	10	
22	4	12	
23	3½	11	
24	3	12	Discontinue common water after this date.
25	2	8	Clay-water.
26	1½	5	
27	2	6	
28	1½	5	
29	2	6	Sp. gr. ·30.
30	2	6	
31	3	7	
Feb. 1	2	6	
2	2	6	
3	4	10	Sp. gr. ·35.
4	4	12	
5	...	...	Mare could not be spared longer from duty.

DEATH FROM RUPTURE OF THE RIGHT PELVI-CRURAL AND OTHER VENOUS TRUNKS.

BY W. A. TAYLOR, F.R.C.V.S., MANCHESTER.

ON July 13th a bay draught-horse was brought to the infirmary, supported on each side by a number of men, who had experienced the greatest difficulty in keeping the animal in an upright position. The horse was perspiring profusely; the perspiration literally teeming from the entire surface of his body. His breathing was greatly distressed; his gait reeling. He was assisted, as quickly as possible, to a loose-box, in which he immediately fell down and died.

I did not see the horse until half an hour after his death, when, from the history of the case and the blanched appearance of the visible mucous membranes, I unhesitatingly gave an opinion that he had died from internal hæmorrhage.

The history of the case is briefly this:—The horse was walking behind a lurry, to which he was tied, and behind him was another horse and lurry. The last-mentioned horse stumbled. His driver

struck him with a whip. The horse jumped forward, and one of the shafts entered the anus of the horse in front—thus, as it were, impaling him for the instant. The injured horse struggled to free himself, and fell; and on the shaft being withdrawn from the rectum, a large quantity of blood followed in a gush, very little external hæmorrhage afterwards taking place. That external hæmorrhage did not occur to any great extent, was undoubtedly owing to the action of the *sphincter ani*, which was subsequently discovered not to have been lacerated.

The *post-mortem* examination demonstrated that the shaft had passed in at the anus, taking an upward, oblique course to the right, and had penetrated (also obliquely) the rectum, about six inches from the anal opening. From this it passed beneath the ilium, the ventral surface of which it had considerably grazed, ultimately reaching as far as the right pelvi-crural venous trunk, in which vessel there was a distinct rupture an inch in length. Shreds only of the external and internal iliacs could be found; indeed, the vicinal structures were almost reduced to a pulp. The mucous membrane of the rectum, for a few inches from the anus, was lacerated; beyond this and the direct rupture, no injuries to the intestine were discernible. In the abdominal cavity was a great quantity of blood, in a semi-coagulated state. The viscera and vascular structures of the body were, of course, considerably blanched. There were no osseous lesions.

Probably the only interest attaching to this case, beyond its unusual occurrence, is the length of time—half an hour—the animal lived subsequently to the reception of the injury.

SUSPECTED CASE OF BLOOD-POISONING.

BY J. COOPER, JUN., M.R.C.V.S., BRIGHTON.

I HAVE forwarded the intestines and spleen of a five-year-old French gelding, and should feel extremely obliged if you would kindly give me your opinion of the morbid structures. The history of the case is shortly this:—I was called, in the absence of Mr. Knight, to see the animal two days ago, and found him presenting the symptoms of an ordinary attack of Bilious Fever.

I saw the horse again the next day, and found him much the same—the appetite tolerably good, and no urgent symptoms being present; however, at six o'clock this morning, a message was sent that the animal was very ill, and on Mr. Knight and myself proceeding to the box, we found him down, extremities deathly cold, visible mucous membranes pallid, feeble running-down pulse, and with all the indications of approaching collapse from internal hæmorrhage. In a quarter of an hour he died.

Post-mortem, two hours after death.—The abdominal cavity filled with blood; heart and lungs healthy, but very anæmic; liver normal; kidneys rather soft in consistence, and their capsules infiltrated with a gelatinous exudation. The spleen, intestines, and mesenteric glands presented the appearance shown in the parts forwarded. I am sorry to say that the knacker performed his duties in so rough a manner that, although internal hæmorrhage was evidently the *immediate* cause of death, I was quite unable to detect the seat of the ruptured vessel. I can therefore only surmise that it must have been a large vessel near the heart, from the quantity of blood lost and the anæmic condition of the pulmonary organs.

I must apologise for the meagreness of this description.

[Professor Duguid furnishes the following report of the parts forwarded by Mr. Cooper:—The spleen referred to in Mr. Cooper's letter was very large and soft, in addition to which there were numerous hæmorrhagic spots on the surface. The mesenteric glands were much enlarged, and their tissue so much broken up and infiltrated with blood that they appeared like soft blood-clots—some of them being equal in size to a goose's egg; the chain of glands along the course of the bloodvessels on the cæcum and colon were in the same condition, giving the appearance of an elongated blood-clot under the peritoneum. The intestines were tolerably healthy, there being only one hæmorrhagic mass, of the size of a hen's egg, in the tissue of the mucous membrane of the colon. I am inclined to think that the blood found in the abdomen was transuded from the vessels without any actual rupture, and that the case was one of blood-poisoning. A more careful description of the case might throw some light on it.—Ed. *V. J.*]

RUPTURE OF THE STOMACH, WITH AN ACCUMULATION OF SAND IN THE COLON OF A HORSE.

BY CAPTAIN RUSSELL, M.R.C.V.S., GRANTHAM.

On Thursday, the 26th July, a very valuable roan hunter, the property of Drake Turner, Esq., Little Ponton Hall, near this town, was observed by the groom to be purging violently. Not being able to account for the cause, he gave him a cordial ball and changed his food, and in a few hours the purging ceased. On going to his box on Friday morning, he, however, found the horse trembling all over, and with a very sore throat. He therefore requested my attendance. On my arrival I found him as the groom had described—shaking, very feverish, and slavering from his mouth. On slightly pinching the larynx a violent fit of coughing was induced. Having dressed his throat with vesicant, and administered a stimulant, I ordered the man to give him another stimulating ball in four hours, and said I would see him again in the afternoon. At four p.m. I visited him, when I found he had had two or three slight attacks of abdominal pain during the day, but they were not acute; he passed fæces of good colour and consistence plentifully, but his urine was high-coloured and scanty. He had fed at intervals. An anodyne drink was given, and embrocation was applied to the abdomen. A drink was left with the groom, with instructions not to leave the horse, and should the pain return, to give him the medicine and send for me at once. About eleven p.m. the symptoms suddenly increased in severity, and I was sent for without delay.

I found him in great pain, as was evinced by constantly lashing out, first with one hind-leg, then with the other; stretching out all four legs, and crouching the body until the abdomen almost touched the ground, lying down, rolling, etc., etc., with the usual symptoms of acute Enteritis. I will not detail the treatment pursued; suffice it to say that, notwithstanding every effort, he continued to become worse up to Sunday morning, the 29th, when symptoms of approaching dissolution set in. Finding our efforts of no avail, he was destroyed, when the *post-mortem* examination revealed an extensive laceration of the external coats

of the stomach, with a small perforation in the mucous lining, through which a quantity of fluid matter had escaped into the abdominal cavity. The anterior portion of the colon, for about three feet in extent, contained about half a bushel of sand; the feculent matter having to pass along a channel upon the upper surface of the sand. There was acute inflammation of the colon and cæcum.

Throughout the duration of the case there were no symptoms of vomiting or retching; fæces were passed in good quantities up to the last few hours. The prominent symptoms were—stretching and crouching, constant violent kicking with hind-legs, savage pawing, biting at the bandages and clothing; and at intervals the animal kept persistently walking round the box. If kept on the move in the yard, he would walk for an hour without any symptom of pain whatever, but directly he stopped it came on with all its severity.

All the hunters at this establishment are bedded on sand and sawdust during the summer months. The green food allowed had lately been discontinued, and hard food substituted, preparatory to taking the horses up for condition. How the sand became accumulated in the colon is an interesting question to solve. It must either have been taken purposely, as the result of a morbid appetite, produced through indigestion; or the animal may have had the habit of upsetting a portion of his corn from the manger, and then, after finishing his feed, of searching for that which had been spilt among the sand. He had never been observed to do the latter, but the groom on several occasions had noticed him with his head down, as if blowing the lighter sawdust from the heavier sand. I give preference to this view, and look upon the case as one of morbid appetite, the result of chronic indigestion, induced by a long period of rest in a loose box after a severe winter's work in the hunting field. I send this hurried account for publication, should it be deemed worthy.

[An accumulation of sand in the large intestines of the horse is not at all an infrequent occurrence among troop horses, which are often picketed on loose sandy soils.

A depraved appetite may lead to the ingestion of the sand;

but we may surmise that in the majority of instances it is accidentally swallowed with the oats which have escaped from the nose-bag during feeding time and are picked up afterwards by the horse from among the sand. We have observed that, for some days after return to stables, troop horses which have been engaged at manœuvres in sandy districts pass much fine sand in their fæces. It has been our misfortune to lose horses from the peculiar form of Enteritis which this sand ingestion induces, —immense quantities of this matter being found in the large intestines. "Sand Colic" is not at all uncommon among troop horses, and is well known to German army veterinary surgeons, one of whom, Peters, has recently published an excellent paper on the subject in one of the German journals.—ED. *V. J.*]

THE ANATOMY AND PHYSIOLOGY OF THE KERATOGENOUS MEMBRANE OF THE HORSE'S FOOT.

BY DR. MOELLER.

(Continued from page 120.*)*

NOT unfrequently smaller vessels are to be seen, which take a course transversely to that of the laminæ. The capillaries are disposed on a very fine "*rete*" under the surface of the lamina. Each lamina is provided with smaller laminæ—secondary laminæ (*Secundär Blättchen*)—or as Fleming, who was the first to describe them, in 1858, calls them, "laminellæ," which take a course parallel to the primary laminæ, and in most places—viz., on the inferior portion of the wall—stand at an acute, and towards the free edges of the primary laminæ, at an obtuse angle to the same. The secondary laminæ are simply continuations of the tissue of the primary laminæ. The fibres of connective tissue radiate from the primary into the secondary laminæ. The average number of secondary laminæ upon each primary one may be reckoned as from 110 to 120. Subdivisions of the primary and secondary laminæ are frequently to be observed.

I would designate this superficial stratum of the podophyllous tissue, which corresponds to the "corpus papillaræ" of the cutis, the *Stratum phyllodes.* (Fig. 7, *d*, p. 119.)

The entire surface of the secondary laminæ is covered by a

Stratum mucosum (*Rete Malphigii*). Lying immediately upon the surface of this portion of the cutis are to be seen, closely pressed one against the other, cylinder cells, which are provided with a faintly granulated refracting protoplasm, and a large oval nucleus. The cells are about 0·016 m.m. in length, and 0·0045 m.m. in width. These cells offer exactly the same characteristics as those of the *Rete*—viz., they are very easily coloured by tinctures.

In many places, the cells belonging to the different secondary laminæ are in intimate relation with each other; this is especially the case in the superior portion of the wall; in others, on the contrary, are to be seen one or more layers of rete-cells, one upon the other. These cells, which are situated upon the outside of the cylinder cells, appear to be round when seen in a transverse section of the laminæ; they form, however, more or less extended spindles, which are placed in a diagonal manner towards the direction of the laminæ. Towards the inferior margin of the wall they increase in number. In the inferior third of the wall are to be observed, as a general rule, layers of cells which have originated from the "hornification" of the spindle-formed rete-cells; and each layer of these cells is situated between two layers of the secondary laminæ, or laminellæ, of the podophyllous tissue. These strata form the secondary horny laminæ.

For the better comprehension of this subject, the following should be noticed:—As is well known, the fleshy laminæ unite in the most intimate manner with the horny laminæ of the hoof, so as to join as a combined whole, and by a most intimate and firm connection, the *os pedis* and the hoof. This intimate union is essentially favoured by the subdivision of the primary fleshy laminæ into secondary, or laminellæ. Between these secondary laminæ—that is, upon their surface—are to be found the above-mentioned strata of rete-cells, which are to be looked upon as secondary laminæ of the primary horny laminæ or keraphyllous tissue. Those secondary horn laminæ which are situated in the superior portion of the horn wall, are composed exclusively of rete-cells, which are very rich in protoplasm, and which, by the continual pushing of the horny wall downwards (growth), are in part transformed into horn; while on the surface of the cutis

new cells are formed. The oldest of these cells—that is, those which are to be found in intimate relation with two secondary vascular laminæ, being enclosed between them—also undergo this hornification. So that we are only justified in speaking of secondary horn laminæ in this locality.

Upon the inferior margin of the podophyllous tissue, where the wall unites with the horny sole, the rete-cells undergo this hornification process *in toto*, and contribute to the formation of the "white line."

B. *The Fleshy Sole*.—That portion of the velvety tissue corresponding to the sole.

This portion of the keratogenous membrane does not offer any very marked variations, in its anatomical structure, from that proper to the wall. The chief point of difference lies in the circumstance, that on the sole we have finger-like papillæ on the surface instead of the laminæ proceeding from the wall. In a transverse section of the sole, we observe the same strata as we have previously described in speaking of the podophyllous tissue. As is known, the deepest layer of the fleshy sole lies at the anterior and lateral portion of the *os pedis*, and possesses also a *Stratum periostale*. Upon the inferior or heel portions of the sole, where the foundation thereof is formed by the cartilages, the deepest layer of the fleshy sole acquires the character of a subcutis, of which we shall treat more fully hereafter.

The *Stratum periostale* is very much less completely developed here than in the podophyllous tissue. Its arrangement also varies. While the fibres of connective and elastic tissue are closely packed together, and take a course towards the wall, or outwards, on the sole their course is in the general direction of the inferior surface of the *os pedis*. It is also far less dense than in the podophyllous tissue, though the cellular character is here, as there, very subordinate. Chondroblasts are only present in insignificant numbers.

The *Stratum vasculosum* is still more deserving of its name here than on the wall—the tissues of the fleshy sole being penetrated by great numbers of vessels of considerable size, which run in all directions. The vessels, especially the larger, are notably present in the vicinity of the circumference of the sole. Micro-

scopically are to be seen large clefts, which especially form the veins, and which in their course unite with the artery and vein of the inferior margin of the *os pedis*. Otherwise the fleshy sole offers no histological differences of importance from the fleshy wall or podophyllous tissue. Coarse fasciculi, formed of dense strong fibres of connective and elastic tissue, cross each other in every direction. That portion of the fleshy sole which comes into relation with the horny sole, and which corresponds to the *Stratum phyllodes* of the fleshy wall, bears on its surface papillæ, as has been already mentioned. These may be looked upon as analogous to the *Corpus papillare* or *Stratum papillare* of the true cutis. The tissue which composes the basis of the sole is, however, exactly the same as that of the wall. The papillæ, as well as the superficial layer of the fleshy sole, consist of a more loose and cellular connective tissue than the deeper portion. This stratum is also very rich in elastic fibres. This portion of the fleshy sole is the seat of the finer ramifications of the venous and arterial capillaries. As a rule, one can observe in each papilla an artery and two veins, which penetrate to the apex of the same; and frequently the latter vessels have a very irregular course. Upon the surface of the fleshy sole is to be found a very rich layer of rete-cells, and a great number of strata of superposed large cells. These rete-cells are always dark-coloured, from a pigment deposit in their protoplasma.

The greater strength of the *Stratum mucosum* is dependent upon the slowness with which the process of transformation into horn cells takes place. This process goes on very gradually, so that a great number of non-hornified cells are always present. From this it is apparent that the transition from the rete tissue into that of the horny sole must be very gradual—a circumstance which essentially contributes to the protection of the fleshy sole from contusions and other injuries to which it is daily exposed.

C. The Fleshy Frog (*Fleischstrahl*), that portion of the velvety tissue or keratogenous membrane covering the pyramidal body-cushions.

This in its composition more closely resembles the cutis proper. The *Strahlpolster*, or pyramidal body, forms a modified subcutis, which is covered by the fleshy frog or velvety

tissue. Although the limits between the pyramidal body and the velvety tissue are rather sharply defined, still there exists between them a very close relationship; as the fibres of connective and elastic tissue of both organs penetrate mutually into the substance of each. Strong fibres of elastic and connective tissue pass from the pyramidal body (including the cushions) into the fleshy frog, in order to become cuticular tissue—a condition which also corresponds to the structure of the true cutis. The *Stratum periostale* is evidently absent, because the fleshy frog comes in no part of its extent in relation with the *os pedis*. The greater part of the fleshy frog is formed by a network of connective tissue, interlaced by many elastic fibres, which cross the organ in every direction; but which, however, take an average course corresponding to the horizontal direction thereof. The meshes of this network are proportionately small in comparison to the size of the single bundles; it is at the same time a dense narrow network of coarse tissue. The meshes of this network are partly filled with bloodvessels, and partly with reticular connective tissue. The remaining strata offer no noteworthy variations from those of the fleshy sole or velvety tissue of the sole, and may therefore be described in the same manner.

(*To be continued.*)

MALIGNANT OVARIAN DISEASE.

BY J. B. WOLSTENHOLME, M.R.C.V.S., MANCHESTER.

[Mr. Wolstenholme forwarded for inspection an ovarian tumour, with a brief description of the symptoms presented by the animal from which it was obtained. As the case appeared to be unusually interesting, we requested him to forward a more detailed description, and this he has most obligingly furnished in the following history.]

COMPLYING with your desire, I append a more detailed account of the case connected with the mesenteric glands and portion of ovary which I forwarded for your inspection.

April 21st, 1877. Patient, a bay cart-mare, of the lighter class; about fifteen years old; has had a foal; has been very healthy until within about a month ago, when her appetite

became capricious and impaired, and when, although well nursed, she gradually lost condition and strength.

This morning severe rigour followed exposure. I was sent for, and found the animal rather better. The extremities were warm; the surface of the body fairly warm beneath the rug; *sweating* in submaxillary space, beneath the mane, down the trachea, and in front of the breast,—this symptom had been noticed for some time previously; pulse 66, very weak; eyes very full, and peculiarly bright and clear; mucous membranes rather pallid; off food; no cough; is casting coat; not tympanitic, but abdomen is abnormally full and round inferiorly; respiration normal; gave a diffusible stimulant, etc. At night much better. Continue nursing, etc.; lively; eating a little.

24th. Examined chest: heart and respiratory sounds normal. On compressing larynx, a short, very hollow cough is elicited.

26th. Pulse 60, weak; pain on pressure over intro-anterior part of right chest; with dulness on percussion, and indistinct respiratory murmur on auscultation.

27th. Pulse 66, weak; respiration 24, deep; the sweating about neck continues; general surface of body chilly; pain on pressure over lower part of chest on both sides; on the right side are patches of surface about the size of one's hand, which are distinctly hotter than surrounding portions; auscultation: left side, respiratory murmur heard only over upper two-thirds of chest; percussion, sonorous upper two-thirds, dull below;—right side, as left side, with dull area occupying lower half of chest. Slight œdema about umbilicus.

29th. Pulse 66, weak; respiration 20, deep; expiration fully half as long again as inspiration. Œdema more marked. Examined urine for albumen,—none present.

May 1st. Continues much the same; breathing as badly "broken-winded"; lively; eats a little; has not laid down during illness; evacuations normal; is very low in condition.

4th. Pulse 72, weak; mucous membranes slightly injected; mucous discharge from nostrils; lower eyelids œdematous; purulent incrustation around each inner canthus; a little pus in each eye; lachrymation; still lively; eats fairly to-day.

6th. Pulse 75, weaker; respiration slow and deep; mucous membranes tinged with a dirty yellow colour; a little discharge

of mucus from vagina points to œstrum. Appetite worse; dependent œdema increasing.

7th. Pulse 84, weaker; greater purulent collection around inner canthi; *coughs* a little; gradually sinking.

8th. As yesterday; slight epistasis; respiration 12.

9th. Pulse 100, small and weak; respiration 12; increased œdema beneath abdomen and breast, none of legs; regurgitation into jugular veins; marked fulness of intercostal spaces corresponding to dull area; sweating about the neck continues.

12th. Much the same; more epistasis.

13th. Much worse; pulse 90, soft and weak; respiration 32, and very laboured; breath fœtid; is now "pot-bellied" in the extreme; no œdema of legs; internal temperature 103·2° F.

14th, a.m. Pulse 84, small and very weak; breath very fœtid; there is a dirty sanious discharge from both nostrils, which also encrusts around alæ. 3 p.m. Pulse 84, the smallest possible thrill beneath finger; respiration 46, very laboured; internal temperature 101° F. Died about 5 p.m.

The treatment has been of the conservative and supporting character: potassæ iodide, in ʒj doses, was used to combat the effusion; vigorous wisping and gentle stimulation of breast and chest were employed to promote the action of skin; but at the outset, so great was the want of vis, and so little the response to treatment, that at an early period in the case I felt justified in informing the owner there was very little hope of recovery.

15th. *Post-mortem.* The subject extremely emaciated; on opening abdominal cavity, a large quantity (at least fifteen gallons) of reddish-yellow serum escaped; peritoneal lining was red and greenish-black in colour, rough, and studded with small quantities of organised lymph; particularly was this the case on the stomach.

Small intestines pale, glistening, and in places semi-transparent.

Mesenteric glands much indurated, with depressed centres and contracted circumferences, much resembling cicatrices, and causing the surrounding mesentery to be puckered; many had a rete of fine threads of organised lymph attached to them; on section they cut as fibro-cartilage, cut surface pale and glistening, with a fibrous arrangement at centre.

Ovaries much enlarged: the one weighed 2 lb. 3 oz. (barely), the other was similar; the inclosing venous plexus was full of blood; several large Graffian vesicles immediately beneath the peritoneum; fimbriated extremity of the Fallopian tube very vascular,—on section very much resembling that of mesenteric glands; no Graffian vesicles in stroma.

Thorax contained several gallons reddish-yellow serum, lungs *not* adherent; pleura costalis generally red, thickened and rough; patches varying from one to several square inches were pale yellow in colour, felt like cartilage beneath the knife, cut surface pale and glistening; pleura pulmonalis not much affected; diffused sphacelus in centre of lungs; a number of indurated bodies, about the size and shape of "tick" beans, and much resembling the mesenteric glands, were scattered through the parenchyma. Heart rather flabby; liver with venous congestion; other organs healthy.

If you consider the case sufficiently interesting for insertion in the *Journal*, you are perfectly at liberty to do so.

[Professor Duguid examined the morbid specimen, and furnishes the following comments:—The ovarian tumour sent by Mr. Wolstenholme was a remarkably good specimen of a primary malignant growth. On the surface it showed a somewhat convoluted appearance; and being almost of the same colour as the grey matter of the brain, it bore a striking resemblance to that organ. In consistency it was dense and hard, cutting more like tendon than other tissue of the body.

On microscopic examination it proved a well marked case of schirrous cancer, the cells enveloped in the dense fibrous stroma being of the epithelial type, and showing all the appearances of active cell growth.

Mr. Wolstenholme's notes of the *post-mortem* appearances show clearly that the ovaries had been primarily affected, and that previous to death the whole body had become more or less invaded, as shown by the enlarged and indurated condition of the mesenteric glands, the presence of nodules in the lungs, and the condition of the serous membranes. It is seldom we meet with a case in which the sequence of pathological changes can be so readily traced; and Mr. Wolstenholme's paper is an interesting and valuable contribution to comparative pathology.]

Editorial.

THE PREVENTION AND SUPPRESSION OF CONTAGIOUS DISEASES IN ANIMALS.

About six months ago England was invaded by the Cattle Plague, and though the invasion might have been prevented, or at least quickly suppressed, the contagion escaped, and until quite recently was active, and may even now exist, in and around London; causing great alarm, most vexatious inconvenience, and directly, as well as indirectly, heavy loss to individuals, no less than to the entire community. Why the contagion was allowed to wander abroad and to produce such serious results, we need not inquire; the reasons are familiar to those who have given any attention to the history of contagious diseases in this country during the last forty years, who know how they are spread and maintained, and what measures should be—but have not been, and are not now—adopted for their prevention or suppression. Suffice it to say, that the disease was introduced in such an open manner, its contagious principle was allowed to be so readily diffused, and the steps taken to arrest this diffusion were for some time so tardy and futile, that the agricultural community, who, for many years, have suffered so severely and so needlessly from scourges of this class, were naturally inspired by well-founded apprehensions of serious injury; and the Government, yielding to their urgent solicitations, at last granted a Parliamentary Committee to inquire into this malady in particular, and Foot-and-mouth Disease and Pleuro-pneumonia incidentally. The Committee sat for some time, and examined a number of people who were more or less conversant with these maladies, and with the traffic in ruminant animals. Very few members of the profession were called upon to give evidence—the number being extremely limited, for some reason or other; the past and present professional advisers of the Veterinary Department of the Privy Council, Professors Gamgee and Müller (of Berlin), and one or two other veterinary surgeons, being the only witnesses who might be said to represent the profession on this occasion. We need not refer to the composition of the Committee, several of whom appear to have had no idea whatever of these maladies, as evidenced by their questions and remarks, and the reasons for whose election it is difficult to understand; nor need we allude to the opinions given by the veterinary witnesses, except to note how readily we may account for the terrible losses this country has sustained, and now sustains, by a perusal of the statements made by the ex-adviser of the Privy Council and his successor. From their testimony, it would almost appear that the principal function of the Veterinary Department is to apologise for the existence of these pestilences; to throw blame on local authorities and agriculturists for their prevalence and destructiveness, instead of protecting the latter and the public; to be sceptical or throw discredit on all knowledge except what they themselves possess; and to allow matters to go just as they may. Notwithstanding the ravages which two of these diseases inflict upon the country every year, and

the utter inadequacy or impotency of the measures proposed for their suppression, one of these two witnesses expressed himself as quite satisfied with the state of affairs; while the other—from whom many important confessions were eventually wrung by questions and cross-questions—was finally obliged to admit that, with regard to the last outbreak of Cattle Plague, the sanitary measures were simply disgraceful! The disgracefulness of the present sanitary system was surely known to the Veterinary Department long before last July; if it was not, then it possesses less knowledge of the real condition of affairs than the majority of veterinary practitioners who have had any experience of our method of dealing with contagious diseases. That the latter surmise is not far from the truth, is proved by the fact that every prediction made by the Veterinary Department with regard to the suppression of this outbreak of Cattle Plague has been falsified by the course of events.

The Parliamentary Committee, or rather a majority of it, has done the best it could, perhaps, under the circumstances, as will be seen from the report of its conclusions which we publish elsewhere. At the most, many of its recommendations are but a compromise, and the most important of the measures proposed have been strongly insisted upon by ourselves for years. There can be no doubt whatever, that these proposals mark a considerable advance in an appreciation of the nature and destructiveness of the three maladies which were considered by the Committee, and that if they are adopted the country will to some extent be guaranteed against the importation of disease. But it must be remembered that slaughter at the ports of debarkation is not an absolute safeguard, as the outbreak of Cattle Plague in March most strikingly proves; and though we may prohibit the importation of cattle from countries which suffer from this disease, yet that there are other formidable scourges, the contagium of which is as subtle and potent, and as readily conveyed mediately or immediately. We hold to the opinion that the importation of living animals as food is neither humane, economical, nor safe, and that the interests of the public, no less than those of farmers, demand that a dead meat trade should be substituted for it as much as possible. Science and common sense support such an opinion, and the substitution will doubtless be effected in time.

With regard to the extinction of the contagious maladies recognised by the Committee as already existing in the country, we must assert that the measures proposed will not lead to that desirable consummation. Unless other measures are adopted and rigidly enforced, we shall never be free from the presence of these scourges. That they can be extinguished, there is no reason whatever to doubt; but that this will be attained by the Committee's proposals, or achieved by the organisation now existing, is impossible.

Our attempts hitherto for the suppression of Foot-and-mouth Disease and Contagious Pleuro-pneumonia have been harassing, most expensive, and utterly useless; and so they will continue until a thorough organisation is established. What is required most urgently in this direction is a Minister of Agriculture, with a State Veterinary Sanitary

Board to advise him, and afford him information with regard to these and other contagious diseases. The present state of affairs is intolerable. The Veterinary Department of the Privy Council only takes cognisance of four or five out of nearly a score of maladies which cause great injury and loss to the nation, diminish the food supply, and (some of them) are positively dangerous to mankind. Not only this, but it appears unable to adopt the initiative in any case, and only moves when much damage has been done, and long after its intervention might have been most useful. It never anticipates events, but waits until they have developed themselves, and then proceeds in its own fashion to control them.

The Lord President, with all his ability, energy, and zeal, is too much engaged with his other multifarious and highly important duties, to make himself acquainted with all the details pertaining to veterinary sanitary science; so that his views are nearly, if not altogether, based on what he is told by the veterinary adviser of the Council. The latter may or may not be the right man in the right place; but even if he possessed such knowledge as entitled his advice to the utmost degree of reliability, it is far too much to impose such enormous responsibility upon any individual, as that of the welfare of our animal wealth, and, to some extent, of the public health. Traditions are always likely to obtain great sway in these departments; and we find notions with regard to contagious diseases of animals still prevailing here which, though they might satisfy the medical science of many years ago, are now well-nigh obsolete. True, the "something-in-the-air" hypothesis has disappeared, and there is an indication that experience, dearly purchased at the expense of the public, is throwing a little light into dark places; but we have only to read the evidence given before the Committee to find that the old Adam still exists. Since the Veterinary Department of the Privy Council was established, and since a special veterinary adviser was appointed, the contagious diseases of animals have steadily increased in prevalence and virulency. Glanders, Rabies, Foot-and-mouth Disease, Splenic Fever, Tuberculosis, the so-called "Typhoid" of pigs, parasitic diseases of various kinds—transmissible to animals or mankind, and other affections of this kind, are becoming more common and destructive; while the sale of flesh of diseased animals is, we have reason to fear, more extensively carried on than ever it has been.

The fact is, that our veterinary sanitary organisation, expensive though it is, is a long way behind the age, and has never done anything to merit its being allowed to exist for a day. We are not sure if it does not occasion far more harm than it can effect good; and had the Committee been further empowered to inquire into what it has done, or what it is capable of doing, to estimate the amount of disease now prevailing with what existed before this Department was instituted, and to offer suggestions founded on this evidence, we are confident that a great public service would have been accomplished, and that Britain instead of being one of the most severely plague-scourged countries

perhaps in the whole world, would soon have offered a very different spectacle. As it is, so powerful is this Department in its obstructiveness, that we have but little hope indeed that the useful, though almost half measures proposed by the Committee, will be wholly, or even to any considerable degree, allowed to become law.

THE TRANSMISSIBILITY OF TUBERCULOSIS.

In an almost exhaustive, and certainly a very interesting paper, on the subject of Tuberculosis in Cattle (known in Germany as *Meerlinsigkeit, Hirsesucht, Monatsreiterei, Stiersucht, Perlsucht*, etc.), Gerlach, Director of the Berlin Veterinary School (*Archiv für Wissenschaftliche und Practische Thierheilkunde*, Band i., Heft 1), applies himself to a solution of the question as to whether the flesh of animals affected with this malady will or will not communicate tubercular disease to the people who consume it. Two hundred years ago, this flesh was forbidden to be sold as food, and it was only towards the end of the last century that permission was given to vend it. Gerlach gives an excellent, though brief, historical sketch of the affection, and refers particularly to its receiving the name of *Franzosenkrankheit*, or "French disease," from the belief that it was syphilitic in its nature; hence the reason for proscribing the flesh of cattle suffering from it. Heim, a physician in Spandau, was the first, in 1782, to show that it was different from Syphilis. Two years later, Granmann proved that it was not Syphilis; while in Prussia in 1785, and in Austria in 1788, the restrictions on the sale of the flesh were removed, and towards the end of the century it was allowed for consumption everywhere; though in some countries, as Norway, an antipathy to its use continued for a long time after that period.* Various opinions as to the nature of the disease were then entertained: by some it was considered to be tubercular, by others sarcomatous, and by others, again, a new formation *sui generis*. For more than twenty years Gerlach has viewed it, from an anatomo-pathological point, as essentially tubercular; and his clinical observations have been founded on its identity with the Tuberculosis of the human species, as is evidenced in his "Handbuch der gerichtlichen Thierheilkunde," published in 1862. Not only this, but long before other experimenters he had produced the disease experimentally, by inoculation, in a number of animals of different species, and satisfied himself that it was really tuberculous, when other investigators had concluded that it was only an "absorption" disease. His first most important experiments with the milk and flesh of diseased cattle were made at the Hanover Veterinary School, between the years 1866 and 1869, and the results were published in the Annual Report of that school for the latter year. Then followed the experiments of Chauveau, Klebs, and others; but to the learned director of the Berlin school must be ascribed the merit of discovering the transmissibility or propagatibility of the disease through the digestive organs. The vast importance of the subject, from a sanitary and agricultural point of view, induced him to devote all his energies to a solution of the question with which he heads his paper—the first in the first number of the journal which he so ably edits, and which is a veterinary publication of the highest scientific order. His experiments are given in detail, and are remarkable not only for their diversity, the large number of animals of different species experimented upon, the care and skill with which they were devised and carried out, but also for their very convincing results.

* We cannot discover that the use of the flesh of tuberculous animals has ever been prohibited in this country, or even suspected of being dangerous.

These experiments were instituted, as we have said, to settle the question as to whether our own species incurs any risk in utilising the flesh and milk of cattle or other animals affected with Tuberculosis. They were, therefore, carried out entirely through the medium of the digestive organs—which would, of course, be the mode of access of the viruliferous agent, if present. The number of animals experimented upon were no fewer than one hundred and ten, and consisted of—

6 Calves,	31 Pigs (young),	8 Dogs,
4 Sheep,	1 Guineapig,	1 Horse,
3 Goats,	54 Rabbits,	2 Pigeons.

These creatures were all in perfect health, and many of them belonged to species which are rarely the subjects of naturally developed Tuberculosis.

They were fed with (1) masses of *raw tubercle* from diseased cattle, consisting of raw *fibrous tubercles* (*Knoten*) from the pleura, and diverse *raw tubercle* masses, (2) with raw *tubercles* from other animals and man, (3) with raw *flesh* from tuberculous cattle and other animals, and (4) with cooked masses of tubercle. We regret extremely that we cannot afford space to notice the experiments in detail, as they are of the greatest possible interest to the comparative pathologist and sanitarian. We have alluded to them briefly, and in so far as they had then been carried out, in a paper published in 1874,* and also in our work on "Veterinary Sanitary Science and Police," published in 1875 (vol. ii., p. 387); and we will now give the conclusions Gerlach has arrived at, as the result of his most praiseworthy and valuable task. We may note that every care appears to have been taken to guard against errors, and to select only trustworthy subjects for experiment. The rabbits were found to be perfectly healthy,—they had been reared in the Veterinary School; and others of the same family used for other experiments were, when killed for examination, discovered to be free from every trace of tubercle. The pigs were of the native breed, and the immunity of the porcine tribe from Tuberculosis was ascertained by frequent visits to the public slaughterhouse, this morbid condition being very rarely observed. It was different with the finer breeds of English pigs, which Gerlach designates as a "tuberculous family." The material for feeding was furnished by Department Veterinary Surgeon Dr. Pauli, as well as obtained by Gerlach himself from the slaughterhouse; Professor Schütz, of the Berlin School, made the autopsies; the experiments were conducted by Gerlach personally. The conclusions are as follows:—

1. There is a specific virulent material in tubercular matter,—the presence of a Tubercle virus is evident. The disease is produced through the digestive canal, by tubercular matter.

2. The fibrous tubercles from the serous membranes contain this virus.

3. The virus is present in fresh, but not in decomposed matter—in the fibrous and cellular tubercle, in the crude as well as the broken-up cheesy masses; though it exists in its greatest intensity in the latter,—a small quantity producing the largest amount of tuberculisation.

4. Infection of the alimentary tract commences in the mucous membrane of the mouth; if the tubercular matter has been left sufficiently long in contact with this membrane, there may be general infection of the entire lymphatic system. This membrane shows an aptitude for infection, from the mouth to the cæcum.

5. The tubercle of other animals and man is more or less virulent.

6. The fibrous tubercle of horses, destitute of cheesy matter, is as infectious

* "The Transmissibility of Tuberculosis."—*British and Foreign Medico-Chirurgical Review*, October, 1874.

as the tubercle of cattle ; though real Tuberculosis is rare in this animal, and it is very difficult to obtain fibrous tubercle which is not present in Glanders ; the miliary tubercle of that disease is not proper tubercle. Glanders is not, therefore, Tuberculosis.

7. The Tuberculosis of *birds*, and especially of the *common fowl*, is very virulent, and identical with the Tuberculosis of mammals,—a most important conclusion, from a sanitary point of view.

8. The *flesh* of a tuberculous cow is also infectious, though not nearly so much so as tubercle itself. It requires a much larger quantity of flesh to produce infection than of miliary or cheesy tubercle.

9. Tuberculous matter, boiled from a quarter to half an hour, is still infectious ; though to a much less degree than when uncooked. The period of boiling required to render it inert depends upon the thickness and density of the mass : in this respect it resembles trichinosed flesh.

Gerlach directs particular attention to the practical fact to be drawn from his experiments—that *the flesh of tuberculous animals of every kind, and particularly that of tuberculous cattle, should not be consumed by mankind as food.* The great danger from its use as an article of diet is indicated by the fact, that the flesh of two of the animals in which the disease commonly appears—cattle and swine—is eaten raw, or half-raw, in North Germany. The relations between Scrofula and Tuberculosis in mankind, and animal Tuberculosis, particularly that of cattle, if elucidated by statistics, might afford us grave matter for consideration. Zürn tells us that the affection prevails among cattle to a very considerable extent in Jena and its neighbourhood ; and he believes that one-sixth or one-fifth of all the cattle there are suffering from Tuberculosis. He also mentions that the statistics of the Anatomico-pathological Institute of Jena, show that about 20 per cent. of the people whose bodies are dissected are affected with Tuberculosis.

In the tubercle alone is the virus *always* present. Gerlach has employed the youngest and most undeveloped masses (*Knotchen*), and produced Tuberculosis as certainly by administering them by the mouth as by inoculation. But it also exists in other parts of the body—as in the soft formations, in the flesh, etc. It is proved by direct experiment, and otherwise, that the process at the commencement is always local, and often very limited ; its extension occurring through gradual infection, which is often so very slow that the disease assumes a chronic form, and remains in this condition so long as it is not complicated with the acute form. Consequently, there is a stage at the commencement of Tuberculosis, in which the flesh may yet be considered innocuous. But an important sanitary question arises as to the period when the flesh begins to be dangerous. At first sight, one would conclude that its use should be forbidden only when the tuberculous cachexia is discernible ; but Consumption, from Tuberculosis in animals, always follows when organs which are not very important begin to be the seat of tuberculisation ; so that long before the cachexia is apparent, the disease has become general. This indication cannot, therefore, be accepted as a safe guide in giving an opinion as to the rejection of such flesh ; and some other practical *criteria* must be at hand to assist in arriving at a satisfactory reason for its prohibition, when its use as food would prove dangerous. These *criteria* Gerlach gives us, and as they are based on his own experiments and observations, he believes them to be reliable. They are : (1) when there is decided disease of the lymphatic glands ; (2) when the tubercles are breaking up and becoming cheesy ; and (3) when tubercles are found in different parts of the body. If either of these conditions is present, the flesh is unfit for food ; but its use is most dangerous when there are deposits of cheesy tubercle in the lungs. Disease of the lymphatic glands accompanies Tuberculosis in the domesticated animals, and is therefore an aid in diagnosing the malady when its

effects elsewhere cannot be ascertained during life. When we find cheesy deposits, we are certain to have the lymphatic glands involved in disease. Should there be any doubt as to whether it is due to a caseous inflammation, cheesy Pneumonia, or a veritable Tuberculosis, the condition of these glands will decide the question. Gerlach only reckons the cheesy inflammation, which is distinct from specific Tuberculosis, as a disease which makes the flesh unfit for food.

We cannot refer, to any satisfactory extent, to the symptoms and lesions produced by feeding the experimental animals on tubercular matter, nor on the different results obtained in different species. Suffice it, therefore, to say that they existed in two degrees—the largest number of animals being affected with Catarrhs—follicular Catarrhs—due to relaxation and tumefaction of the tissue of the mucous membrane and its glands—both the solitary and Peyer's patches, most of which were more or less swollen, and covered with a copious layer of thick mucus. Rabbits chiefly suffered from this milder form. Sheep were affected with the severer form of Tuberculosis, and in them were found crude and cheesy tubercles. In pigs, the mucous membrane of the pharynx was involved, when they were not fed with the tubercular matter by means of an œsophageal tube.

The lymphatic glands in the vicinity of the diseased mucous membrane were swollen, œdematous, and abnormally filled with lymph corpuscles; at a more advanced stage, there were miliary tubercles and small cheesy deposits; still later, partial or general caseation of the glands; and after a long period from the date of infection, there was thickening of the connective-tissue septa of the gland-lobes, with layers of miliary tubercles. The mesenteric and intestinal glands, as well as those of the throat, were infected and diseased. The mucous membrane of the mouth and pharynx, as already mentioned, became affected through contact with the matter on which the animals were fed.

After the lymphatic glands were involved, other organs became affected: first the lungs; after them, though seldomer, the liver; still more rarely, the spleen and kidneys; and at times other parts—as the joints, *dura mater*, etc. The lungs generally exhibited the Tuberculosis *in optima forma;* in the subpleura, and deeper in the lung, were tubercles in various stages and of various sizes. When the disease was of brief duration, there were recent, grey, smooth, miliary and submiliary tubercles; when it had run a longer course, there were cheesy masses the size of a pea, and larger in some cases, —in rabbits particularly, with inflammation of parts of the lung; and where adhesion had taken place between the pleura pulmonalis and the pleura costalis, there were generally the largest cheesy masses—Tuberculous Pneumonia. The bronchial glands were always affected, either indirectly through the lungs, or directly through the alimentary canal.

Arthritis occurred in calves; and Gerlach believes, as another result of his experiments, that the tuberculous Arthritis of calves is due to a tuberculous mother, or follows rearing by a tuberculous cow; therefore he is of opinion that the so-called "Calf-lameness" (*Kälberlähme*) is, in one of its forms, a tubercular Arthritis. It is surmised that, under the collective designation of "lameness," there are three different processes: (1) Rachitism, which is witnessed in its most intense form in foals; (2) Pyæmia, which Roloff was the first to show gave rise to inflammation of the joints, and was due to inflammation of the umbilicus—his observations with regard to this pyæmic synovitis being corroborated by Bollinger at a later period; and (3) tubercular Arthritis.

Some of the young pigs exhibited symptoms of inflammation of the outer and middle ear, and when killed all were found to be diseased; the five which had shown these symptoms had tuberculous tumefaction of the middle

ear, one had the inner ear involved, the labyrinth being filled with masses of fibrous tubercle. The mesenteric glands were tuberculous, there were great numbers of miliary tubercles in the lungs and liver, and some in the spleen and kidneys.

In our works already alluded to, in which we gave a summary of the knowledge that had been obtained from experiments in Tuberculosis up to the date of their publication, we mentioned some interesting results obtained by M. Viseur, an accomplished veterinary surgeon in Arras, France. In the *Recueil de Méd. Vétérinaire* for September, 1875, that gentleman gives an equally interesting account of additional experiments he had undertaken to further elucidate the transmissibility of Tuberculosis by the digestive organs.

Towards the end of 1874, he lodged, in spacious, well-ventilated kennels in the *abattoir* of Arras, six cats, three dogs, and a pig. The latter died from gangrenous Erysipelas some days after the experiments were commenced, but nothing of the nature of Tuberculosis was found at the autopsy. All the other animals were fed alternately on fresh healthy flesh, and boiled paunch and bread. On October 24, the morning ration was replaced by the *débris* of the lungs and glands of a tuberculous cow, which the animals ate voluntarily, some of them with avidity. Cats Nos. 4 and 5 were rather exceptions, as they only took ten grammes of tubercular matter. This feeding was repeated on October 30, November 2, 9, and 18, and December 1 and 5. At the latter date, the youngest animals showed symptoms of illness; they were less lively, coughed frequently, and had Diarrhœa. On December 21 they could scarcely move, and refused their food, and Nos. 3 (cat aged seven months) and 4 (cat aged three months) died; No. 5 (cat three months old) succumbed the second day after, the cold then prevailing being supposed to have accelerated the succession of morbid phenomena.

Nos. 1, 2, and 6 were not in good condition; their coat was dry and erect, and they coughed; but their emaciation was as nothing when compared with that of the younger animals, whose digestive and assimilative functions, in consequence of their age, were greatly disturbed.

The autopsy of the animals which had died, as well as the slaughter of the survivors, was fixed for December 24—sixty-one days from the commencement of the experiments. On December 22, two of the cats escaped. The bodies of the remaining four were opened in the presence of Dr. Christien, President of the Central Medical Society of the Nord, and Professor in the Lille Medical College; Professors Bremards and Germe of the Arras Medical School; and Veterinary-surgeon Canna of the Engineers.

In all the animals the respiratory organs were seriously affected (*gravement atteint*). The lungs were studded, superficially and deeply, with grey, hard, semi-transparent nodules. The deep-seated ones were about the size of a large pin-head; those more superficial were spherical and reduced to the size of the finest miliary granulations, difficult to break up, and giving the pleura a roughened aspect. The submaxillary, retro-pharyngeal, and pre-pectoral glands were very visibly tuberculosed. In one animal the lesions had reached an extraordinary degree of generalisation; the laryngeal mucous membrane offered different phases of the disease—granules and ulcerations closely set together. The digestive organs offered a still more remarkable condition. In the peritoneum, the granulations were particularly grouped in the terminal portion of the ileum and the commencement of the colon: they were dense, resisting, and the size of millet or hemp-seed. In the small intestine, Peyer's patches had more or less undergone the effects of tuberculous inflammation. Around the ileo-cæcal valve in one case (cat) were ulcers, some of them extending through the muscular coat. In another cat the lesions were startling (*effrayantes*), the ileum being the seat of a veritable

confluent eruption ; its walls were thickened, hard and rough to the touch, and its serous membrane had also become greatly thickened, and showed layers of superposed granules. The mesentery was shrunken, and its folds, from the points where absorption had been most active, exhibited, on the course of the lymphatic vessels, numerous semi-transparent granules the size of small grains of sand disposed in a typical manner. The glandular apparatus was in such a state of tubercular hypertrophy, especially in the young animals, as to account at once for the marasmus that ensued. The pancreas of Aselli, and the other glands annexed to the ileum and colon, were more than double their natural volume, and at some points were filled with a whitish, semi-transparent, more or less cheesy matter, and yellowish or cretaceous matter in others. The liver and spleen, chiefly the latter, contained salient tuberculous nodules. The other abdominal organs appeared to be healthy.

None of the cats had escaped infection, and the infecting agent had acted so powerfully, that the multiplicity, generalisation, and gravity of the lesions were remarkably apparent. With the dogs the results were less uniform, though they had gluttonously eaten a large quantity of tuberculous matter.

The social aspect of the question brought into view by the results of his experiments, is carefully considered by Viseur. He remarks that all observers are agreed that, apart from its artificial production by experimentation, the disease scarcely ever affects young cattle, *except as the result of contagion through cohabitation with phthisical animals.* Those which bear the germs of the disease at birth, in which it is only *hereditary* and of *slow evolution*, often reach the slaughterhouse in a state of perfect health, and before the germs have been hatched, so to speak : provided that to the hereditary predisposition there is not added insufficiency of respirable air and light in their dwellings, decrepitude, and "physiological misery"—circumstances in themselves capable of producing Phthisis.

The flesh from tuberculous cattle, which are generally worn out from old age and numerous calvings, should be interdicted. In the North of France, the first object in cattle economy is the production of milk and butter ; but if the small farmers, instead of requiring nine and ten calves from the same cow, were satisfied with five, then the cows, being only at this time about seven years old, still possess the power of assimilating food quickly and advantageously, and would furnish a large quantity of flesh of the first quality,—thus adding to the source whence populations derive their strength. Five or six years after this period, these cows are consumptive (*poitrinaires*), in the proportion of 20 or 30 per cent., and *infect, at first, those nearest them, then communicate to their later progeny the germs of a disease which, from being in many cases an acquired one, thus becomes hereditary.*

Viseur adds, that at this time these cows only yield milk poor in nitrogenous matters, fat, and sugar, but rich in water and earthy salts ; this milk, owing to its composition, should be unhealthy for children of a tender age. He admits that the flesh of such animals is often a delusion, if not a source of danger, for those who have the misfortune to consume it ; and he justly states that a diminution in the number of old cows would cause a proportionate increase in the adults, so that all the calves likely to grow into useful breeders would be reared, and we should no longer have to note, with regret, the profusion with which, before they are three months old, calves are killed in the abattoirs, and which exhibit in the highest degree those general and local indications which characterise an aptitude for dairy purposes.

Once more we have drawn attention to this most important question, which should obtain the serious notice of the public. The first in this country to point out its gravity, we can only from time to time urge the necessity for

taking notice of our warnings. Tuberculosis in cattle is a very common malady in these islands; and the same disease in its various forms, as well as Diarrhœa, is terribly prevalent and fatal in our own species. How far this mortality may be dependent upon the consumption of the flesh and milk of diseased animals, we dare not say; but the skilfully conducted and well contrived experiments of members of the veterinary profession, have placed beyond doubt the possibility of this transmission; and though the fact that this proof has been furnished by them, may cause it to be lightly valued by those who look with a jealous eye upon the advancement of veterinary science, yet the public danger is not thereby diminished, but rather increased. And as we have a public and a professional duty to perform in this matter, we shall not cease to refer to it as often as may be necessary, regardless whether the future investigations be those of veterinarians or members of the sister branch of medicine: both being workers in the same field, and both labouring to the same great end.

REPORT OF THE CATTLE PLAGUE COMMITTEE.

THE following is the full text of the report of the Select Committee appointed to inquire into the causes of the recent outbreak of Cattle Plague, and the measures taken for its repression; and into the effect which the importation of live foreign animals has upon the introduction of disease into this country, and upon the supply and price of food:—

"1. Your Committee have examined witnesses from the Privy Council Department and representatives of the different trades affected, as well as of the agricultural interest, and have taken much evidence as to the dead meat trade recently established with America, and the supply of food to the manufacturing towns.

"2. They have had before them the evidence taken upon this subject by the Committee of 1873, and their report.

"3. Your Committee will first consider the question of Cattle Plague.

"4. They have carefully gone into the causes of the recent outbreak, and have ascertained that the disease was imported by animals arriving from Hamburgh before the authorities here had any intimation of the outbreak at that place. They are glad to be able to report that they are satisfied by the evidence that, with proper regulations, Cattle Plague might be stamped out in a short time, and that no ground really exists for the fear of its becoming as destructive as it was in 1865. But the existing provisions, whether for its prevention or for its suppression, require considerable improvement.

"5. With respect to the risk of introduction of disease into this kingdom, serious difficulties must always surround the importation of cattle from abroad, especially from a country like Germany, with a long exposed frontier. In such a case no measures short of prohibition would give the necessary security; whilst as to other countries the evidence leaves no doubt as to the necessity of foreign Governments imposing stricter regulations on their export trade in live stock, and especially providing that notice of any outbreak of Cattle Plague shall be forthwith communicated by telegraph to the authorities of this country. These are matters which should be made the subject of international arrangement.

"6. With regard to home arrangements, the recent outbreak in this country suffices to prove that the system under which the powers of dealing with disease are, in the first instance, committed to the local authority, does not work satisfactorily, and that the powers of the Privy Council should, in every instance, be exercised at the earliest moment, and that, with this view,

it should be the duty of the local authority at once to inform the Privy Council of any outbreak of the malady.

"7. That the power to order the slaughter of suspected animals should extend to animals on premises adjoining to those actually infected, seems as necessary to your Committee as it did to the Committee of 1873.

"8. Your Committee are also of opinion that further inducement should be held out to owners of stock to report the first appearance of the Cattle Plague amongst their stock. At present, whilst one-half of the value is paid as compensation for any animal actually diseased, only three-quarters is allowed for an animal slaughtered on suspicion. Your Committee consider that in the latter case the full value should be paid, subject only to a maximum of £40.

"9. Lastly, your Committee recommend that all compensation for the slaughter of animals on account of Cattle Plague, whether such animals are actually diseased or only suspected, should in future be defrayed out of imperial, and not, as now, out of local funds. This change in the incidence of the charge is almost a necessary consequence of the change previously recommended. under which the order for slaughter will, in all cases, proceed from the central instead of the local authority; but apart from this it appears justified by considerations of public expediency. The rapidity with which Cattle Plague, if left unchecked, spreads far and wide, makes it a matter of general concern that measures should be immediately taken for its suppression. Experience has shown that it can with certainty be suppressed by the slaughter of all animals within the zone of suspicion, and by no other course; and further, that if the case is promptly dealt with, the limits of this zone are comparatively narrow. The order for the necessary slaughter is therefore one which should be made without hesitation, and any compensation which in consequence becomes payable may be deemed a cheap insurance against what would otherwise become a national misfortune.

"10. But Cattle Plague is not the only question. It was abundantly proved in evidence that the ravages of Cattle Plague since the Act of 1869, and the diminution of the breeding herds of the kingdom from the fear of breaking out of Cattle Plague, are as nothing compared with the losses inflicted and the enterprise checked by Pleuro-pneumonia and Foot-and-mouth Complaint. In addition to the losses to the community of animals actually destroyed by either of those diseases, or slaughtered to prevent the spread of Pleuro-pneumonia, the agricultural and other witnesses laid great stress on the fact that whatever loss fell upon the farmer from the deterioration of his stock through Foot-and-mouth Complaint re-acted injuriously on the consumer, by the diminution in the number of fat stock which the farmer was able to place on the market in a given time.

"11. One witness, it is true, Mr. Gebhart, questioned the capability of the grazing lands of the country to support herds much larger than those which now exist; but in this view he stood alone. Witnesses with practical experience, like Mr. Booth, Mr. Clare Read, Mr. Jacob Wilson, Mr. James Howard, Mr. Adam Smith, and the President of the Scotch Chamber of Commerce, Mr. Melvin, all agreed that if immunity from these two scourges were assured beforehand, such an increase might be anticipated in the breeding herds as would in the course of a certain time be large enough to make up for whatever diminution of supply might be occasioned by any new restrictions on the import from foreign countries.

"12. Both these diseases are attributed to foreign origin; at all events, it was admitted that they are widely prevalent in some countries from which importation now takes place; and the number of cargoes stopped at the ports on account of disease having been actually discovered in the animals when landed, justifies the opinion that in many other cases animals really

contagious are passed by the inspectors at the ports, owing to the voyage having been too short to allow the malady to develop to that stage where it is open to detection. This is more especially the case in Pleuro-pneumonia, which has often been known to lie dormant for periods varying from two to three months.

"13. If, however, it was proved how inseparable from the importation of foreign cattle is the risk of the introduction of these two diseases, it was shown beyond a doubt that at the present moment they both exist so largely in this country that unless further restrictions are applied to the movements of our home stock, no restrictions on the foreign trade can give the least hope of the eradication of these diseases, which is the necessary condition of any adequate development of the home supply. In fact, it was admitted by every witness that if these diseases are to be stamped out, both kinds of restrictions were equally indispensable.

"14. In the opinion, therefore, of your Committee, the first matter to be decided really is, whether the farmers of this country are prepared to submit to the inconvenience of such home regulations as may be found to be requisite. Should this be the case, then, and then only, would arise the further question as to whether new restrictions should be placed on the foreign import.

"15. Adopting this order, your Committee proceed to consider the home regulations which the various witnesses insisted upon as necessary.

"16. On this point, Professor Brown expressed a very strong opinion that, whether for the purpose of dealing with Cattle Plague, should it arise, or of stamping out Pleuro-pneumonia and Foot-and-mouth Disease, one of the most important amendments of the existing system would be the establishment of uniform regulations applicable to the whole country, such regulations to be issued by the Privy Council, and to be carried out by Privy Council inspectors stationed in each district.

"17. So far as relates to the necessity of uniform rules to be issued by the central authority, Professor Brown's views were strongly supported by Lord Fitzhardinge, Mr. Rea, Mr. Wilson, Mr. Stratton, Mr. Adam Smith, Mr. Melvin, Mr. Soulby, and Mr. Clare Read, on the part of the agricultural interests; by Mr. Tisdall, represesenting the Dairymen's Society; by Mr. Giblett and Mr. Lambert, two salesmen; and by Mr. P. Rudkin, on the part of the market authority of the city of London. The evils of the present want of uniformity were forcibly illustrated by Mr. Wilson's description of the different regulations which had recently prevailed at the meeting point of the districts of three local authorities at Newcastle.

"18. But when it came to that part of the suggestion which placed the appointment of the local inspectors in the central authority, the witnesses were not so unanimous. Lord Fitzhardinge, Mr. Rea, Mr. Wilson, Mr. Adam Smith, Mr. Tisdall, and Mr. Stratton were of opinion that if, as they suggested, the central authority were to make regulations for the whole of the country, the central authority should also, in order to ensure their regulations being carried out, have the nomination of the inspectors. On the other hand, Mr. Melvin recommended that the localities should appoint their own inspectors as now, but that the Privy Council should have a travelling staff to see that these local inspectors properly carried out the rules, just as inspectors of the Local Government Board supervise the action of the local poor-law authorities. Mr. C. Read supported the latter view, with the qualification that all local authorities in the same county should be united for the purpose of appointing inspectors; while Mr. James Howard and Mr. Soulby urged that the police, responsible as they are to quarter sessions in counties and to town councils in boroughs, are sufficient to carry out any regulations, subject only to the intervention of the Privy Council in the case of a serious outbreak.

"Your Committee are of opinion that the Privy Council could not undertake the work of local inspection throughout the kingdom, and agree with Mr. Melvin that the appointment of inspectors should rest with the local authority, subject to the supervision of the Privy Council.

"20. But whatever difference of opinion existed as to the authority which should enforce the regulations, it was admitted that farmers would find themselves under a much stricter *régime* than that which has hitherto been in operation, inasmuch as in every district where either Pleuro-pneumonia or Foot-and-mouth Disease existed, all movement of cattle would be prohibited except under license; fairs and markets would be under similar restrictions, and absolute prohibition of movement would be enforced against infected farms for periods varying from two months in Pleuro-pneumonia to twenty-eight days in outbreaks of Foot-and-mouth Disease. Further, the same regulations would have to be extended to Ireland and the Channel Islands, or else animals brought by sea from those parts of the kingdom should not be permitted to be landed except at defined ports, where provision was made for subjecting them to proper inspection.

"21. Upon the question whether such restrictions would be accepted, Professor Brown stated his own opinion to be that as these restrictions must be expected to last for a considerable period before the diseases could be stamped out, the country would not endure them, and would prefer the continuance of the diseases to such a cure. Professor Brown, however, admitted that this opinion was not in accordance with what he had been informed were the views of the agriculturists, and as a fact, with the one exception of Mr. Soulby, all the agricultural witnesses who appeared before your Committee—and many of them spoke as representatives of large bodies of farmers in various parts of the country—expressed themselves with confidence that, provided there was an assurance against the re-introduction of disease from abroad, these home relations would be willingly accepted by the farmers of the country.

"22. And your Committee, with this evidence before them, can hardly resist the conclusion that such would be the case.

"23. In the belief, then, that such regulations as have been indicated would be accepted by the home trade, your Committee pass to the question as to what additional restrictions to the foreign trade would have to be combined with such home regulations, in order to give the requisite security.

"24. The inspection of the ports being admittedly insufficient as a protection against Pleuro-pneumonia, and uncertain even in the case of Foot-and-mouth Complaint, some witnesses advocated the total prohibition of live animals from abroad, suggesting their slaughter at the port of embarkation. But the greater number of the agricultural witnesses, including Mr. Odams, Mr. James Howard, Mr. Melvin, Mr. Clare Read, admitted the difficulties of such a course, considering that the country was not prepared for so complete a change, and that the result might be to drive the foreign supply into other markets. They therefore preferred to advise the compulsory slaughter of imported animals at the port of debarkation—all countries, with the exception perhaps of America, being thus treated as scheduled countries at the present moment.

"25. A third proposal which was brought before your Committee, was that, on the one hand, so far as regards Belgium and Germany, the importation from those countries of live cattle should be absolutely prohibited, and of live sheep should be allowed only on the condition that they should be slaughtered at the port of debarkation; and that, on the other, as to unscheduled countries, such as Spain, Portugal, and Denmark now are, all animals coming from there should be freely admitted into our ports, and allowed to

pass inland, provided only that the Privy Council were satisfied with the precautionary regulations in force in such countries.

"26. This suggestion as to the prohibition of the importation of cattle from Germany and Belgium was founded on the extreme uncertainty of obtaining timely information here of any outbreak of disease in Germany, and on the consideration that Belgium is a transit country for German cattle.

"27. On the whole, after considering the various alternatives, your Committee would recommend that, as a statutory arrangement, the importation of all animals from Russia, and all cattle from Germany (with the exception of Schleswig-Holstein) and Belgium should be prohibited; and these last two countries as to other animals, and the rest of Europe as to all animals, should be added to the list of scheduled countries, with power to the Privy Council to forbid the importation of animals from other countries if they think fit.

"And all fat cattle imported therefrom shall be slaughtered at the port, such ports being defined, of debarkation; and that all store, or dairy, cattle should be quarantined for fourteen days at certain defined ports of landing. Such stock, on removal, to be registered as to where sent, and there to be under restraint and immovable for two months.

"28. Your Committee believe that these combined restrictions at the ports and inland would succeed, if enforced, in stamping out these diseases; and assuming this to be the case, the great question would still remain how far the result would affect the supply of meat to the country, especially to large manufacturing towns.

"29. It was acknowledged that to bring about such an increase in the home supply as the witnesses anticipated from the greater security against these complaints, must take time; and the foreign importers and salesmen who opposed these restrictions asserted, as they did in 1873, that any such interference with the present established trade as would arise from slaughter at the ports, would drive the foreign trade to other markets; and thus not only reduce the supply and make meat dearer, but in the interval, before the promised increase in the home stock had been realised, raise the price of meat unduly in many of our inland towns.

"30. On the other hand, many practical witnesses assured your Committee that, instead of diminishing and driving away the supply, the establishment of any fixed rule rendering slaughter at the port compulsory would really increase the number and the quality of the animals sent. They pointed out that the present regulations are not favourable to the exporter. The fact that if, on the arrival of his cargo at the port of debarkation, disease is detected he has to re-ship his animals and take them on to Deptford, or some other port for immediate slaughter, renders him at all times uncertain of his market, and frequently puts him to much expense. The same causes, in their opinion, operate injuriously to Deptford Market itself. The supply to that market mainly comes either from countries temporarily scheduled—*i.e.*, countries from which cattle cannot be imported except into a port where provision is made for their immediate slaughter—or else from casual cargoes, which were originally consigned to other ports, but which, on account of infection having broken out, it has been necessary to bring on to Deptford for slaughter. The supply, therefore, is uncertain from day to day; buyers, in consequence, are not attracted, and from the want of competition prices are irregular. If, on the other hand, it was once made a rule that all foreign animals are to be slaughtered on their arrival in port, it was confidently asserted that a steady trade would arise, and competition be the same as at Islington Market; and in confimation of this view, it was shown that during the recent period of restrictions large supplies had been sent over with the full knowledge that the animals would be slaughtered at the port.

"31. It was next objected, that even if the number of animals sent to this country was not diminished by the animals being slaughtered at the ports, the difficulties of carrying the animals from those ports as dead meat to the inland towns would, in hot weather, be so great as to deprive those towns of much of their present supply, more particularly in foreign sheep; and the butchers from northern towns especially urged that their trade could not be carried on unless they were able, as now, to take the live animals from the port of debarkation to their own slaughterhouses, there to be killed as wanted for their customers.

"32. But the evidence given by Mr. Rudkin, strengthened as it was by that of the Deputy Chairman of the Great Western Railway, Sir Alexander Wood, and other witnesses, leads your Committee to believe that these fears are without foundation, that there is no real difficulty in the supply of dead meat, and, with proper arrangements, even of offal to those towns, and that for some time a dead meat trade, especially in sheep, has been regularly carried on from Deptford Market all over the country, increasing since the restrictions were enforced. Dead sheep have been also sent in large numbers to Wales, not unfrequently coming back to London as Welsh mutton. And the fact that the Aberdeen supply of dead meat to the London market has of late largely increased (reaching an average of from sixty to seventy tons a day, even in hot weather), affords additional evidence in this direction.

"33. Having, then, carefully considered the evidence, your Committee have arrived at the conclusion that compulsory slaughter, at the port of debarkation, is not likely to discourage foreign importation, or to diminish the supply of our large towns, or generally to raise the price of meat. The change, however, would be a considerable interference with the present system of trade carried on by butchers and salesmen. For this reason, and because proper arrangements would in many cases have to be made at the ports selected for debarkation, your Committee feel that it would be well to postpone the commencement of the change for a time sufficient to enable the necessary preparations to be carried out.

"34. With regard to the importation of dead meat from America, as affecting this question, the evidence shows that there are hardly any limits to the amount of meat which can be imported from that country; that in cool weather the meat can without difficulty be delivered here in perfect order, and that with greater care in the packing, and with better arrangements for storage here, it could be brought over in the hottest months. American meat already forms a useful supplementary supply to the meat markets of this country, and in no very distant future will probably constitute a most important addition, and will materially aid the carrying out of such a system as your Committee have suggested above. But the trade is at present in too uncertain and experimental a condition to justify reliance upon it for an unfailing supply.

"35. Another important recommendation which was suggested for checking the spread of these diseases, was made by Mr. Rudkin, Mr. Gebhart, and other witnesses: viz., that cattle exposed in Islington Market should not be allowed to be removed for exposure in any other market. For this purpose they proposed that all animals, on arriving at Islington, should be marked for slaughter, and that the making use of such market in other places, or the exposure in any other market of an animal so marked, should be prohibited under severe penalties. It was shown that this market is the hotbed of various diseases, more especially that the lairs are tainted with the Foot-and-mouth Disease, and that it is the practice of small jobbers to buy fat beasts in this market in order to remove them for re-sale to some local market, where they are necessarily brought into contact with both fat and store stock, and thus become the means of setting up fresh sources of contagion in various parts of the country. These jobbers would no doubt be

affected by the restriction proposed, but no loss would fall on either the producer or the consumer, and your Committee have no hesitation in recommending the change as one of considerable value.

"36. In connection with this part of the subject, the attention of your Committee was also directed to the prevalence of disease in the dairy sheds in the Metropolis and large towns, and the great danger of contagion being carried from them into the markets, and thus spread throughout the country. The evidence showed the constantly-changing nature of the trade, that cows are sent into the markets on showing the least symptom of being affected, and their places filled by fresh stock. The danger from these sheds was strikingly proved by the last outbreak of Cattle Plague in London.

Much evidence has also been given as to the feasibility of superseding town dairies by milk from the country. It was proved that by far the larger part of the present supply of London was brought from dairy farms established for the purpose, often at a considerable distance from town; nor is there any reason to suppose that the milk thus supplied is inferior in quality. Mr. Tisdall, who appeared on the part of the Dairy Association, stated that there was no difference in the quality or the price of the milk produced as between his dairy at Epsom and his cowshed in London, and admitted that the metropolitan supply from the country dairies arrived in perfect condition. From his evidence, your Committee were also led to believe that the Dairy Association were well aware of the dangers of infection from their town sheds, and were willing to submit to regulations and inspection. On the whole, notwithstanding much evidence against the continuance of dairy-sheds in large towns, your Committee are of opinion that if registration, a real inspection, and sufficient regulations as to the movement of animals to and from these places are enforced, they may be allowed to remain without danger to the public.

"37. Your Committee have already alluded to the necessity which, in event of the same regulations not being adopted in the three parts of the kingdom, which arise for defining ports in Great Britain, where alone animals from Ireland or the Channel Islands would be allowed to be imported by sea, and where they would be examined by an inspector before being suffered to pass inland. The evidence of Lord Fitzhardinge and Mr. Peters showed that it has occurred that infected animals from Ireland have been landed at a British port where there is no provision for inspection, and have been then driven through healthy districts to the various markets, and thus distributed throughout the country. Such a system your Committee feel could not be permitted to continue if, with a view to stamp out the diseases, Great Britain was subject to regulations controlling the movement of home stock, and adding permanently to the number of scheduled countries. And your Committee think it to be their duty, in view of the evidence which they have received, to recommend that a searching inquiry should be made into the subject of the transit of cattle from Ireland to the ports of Great Britain, into the provisions made for their reception at the ports of departure and of arrival, and into their treatment during the voyage.

"38. In conclusion, your Committee recommend as follows:—

"(1.) That as a statutory arrangement the importation of all animals from Russia, and of cattle from Germany (except Schleswig-Holstein) and Belgium, be prohibited, whilst that of other animals from these last two countries, and of all animals from the rest of Europe, should be subject to the provisions of the same schedule; power being reserved to the Privy Council to prohibit the importation of animals from other countries if they think fit. An exception, however, should be made in favour of store and dairy animals, provided they remain in quarantine for fourteen days, and afterwards are placed under inspection for two months.

"(2.) That the Privy Council should be empowered to deal directly with the Cattle Plague whenever it appears in this country, and that for this purpose it should receive from the local authority immediate notice of every outbreak.

"(3.) That the power to order the slaughter of animals suspected of Cattle Plague should extend to animals in premises adjoining to the infected premises.

"(4.) That whilst the compensation for the slaughter of animals affected by Cattle Plague should remain as it is at present, the compensation for the slaughter of animals suspected of that disease should be the full value (not however exceeding £40).

"(5.) That all compensation for the animals so slaughtered, whether diseased or suspected, should be defrayed from imperial funds.

"(6.) That in case of Pleuro-pneumonia or Foot-and-mouth Disease breaking out, the Privy Council should have power to fix the limits of the district which is to be treated as infected.

"(7.) That uniform rules applicable to all districts declared infected should be issued by the Privy Council, but should be enforced by the local authority, subject to the supervision of the Privy Council.

"(8.) That, in the case of Pleuro-pneumonia, the compensation for the slaughter of animals, whether suspected or diseased, should be at the same rate as in the case of Cattle Plague, but should be payable out of local funds.

"(9.) That stock exposed in Islington Market should not be allowed to leave the metropolitan district alive.

"(10.) That, in the Metropolis and large towns, dairy and cattle-sheds should be subject to registration, inspection, and regulations.

"(11.) That the restrictions applicable to Great Britain should be extended to Ireland and the Channel Islands, or else that ports should be specified in Great Britain by the Privy Council, to which alone importation of live animals from Ireland and the Channel Islands should be lawful, the animals not being permitted to be taken inland unless examined and passed by a Privy Council Inspector at the port of debarkation.

"(12.) And your Committee are of opinion that no further restrictions should be placed on the importation of foreign animals in respect to Foot-and-mouth Disease and Pleuro-pneumonia, unless at the same time orders be enforced throughout Great Britain that in every district where either Pleuro-pneumonia or Foot-and-mouth Disease exists, and which has been declared by the Privy Council to be infected, all movement of cattle be prohibited except under license; that fairs and markets be under similar restrictions; and that absolute prohibition of movement be enforced against infected farms for periods varying from two months in Pleuro-pneumonia, to twenty-eight days in outbreaks of Foot-and-mouth Disease.

"(13.) That where required effect should be given by the Legislature to these recommendations.

"*July 25th*, 1877."

PRESENTATION TO PROFESSOR COOKE, OF THE GLASGOW VETERINARY COLLEGE.

ON the 19th of July the students of the above College met within the lecture room, under the presidency of Professor McCall, when Professor Cooke was presented with a magnificent timepiece, which bore the following inscription :—"To Professor Cooke, F.C.S., from the Students of Glasgow Veterinary College, in token of their appreciation and esteem. Session 1876-7."

Mr. Mahoney, in making the presentation, spoke of the many high qualities of Mr. Cooke, both as a man and as a teacher, and alluded to the untiring energy and zeal which he had displayed in conducting his classes. He concluded by wishing that "success which true genius only can merit, and substantial ability deserve."

Professor Cooke, in thanking the students for their handsome present, said that no class were more gratified to know that their services were appreciated than teachers. Students now had more time to devote to their studies, and in consequence more was expected of both teachers and students. He thought he had only done his duty, and was extremely grateful to know that his labours had given satisfaction.

ROYAL COLLEGE OF VETERINARY SURGEONS.

AT the several meetings of the Scottish section of the Court of Examiners of the Royal College of Verterinary Surgeons, held in Edinburgh and Glasgow on July 18th, 19th, and 20th, the following students passed their "First Examination":—

EDINBURGH VETERINARY COLLEGE.

Mr. John Blench.
„ Thos. Mallalieu Curtis.
Mr. Charles Rutherford.
„ Geo. Marshall Mitchell.
Mr. Alexander Grey.

EDINBURGH NEW VETERINARY COLLEGE.

Mr. William Henry Bridge.
„ Josiah Simpson Walker.
„ Frederick Bridge.
„ Wm. Henry Moore.
„ Richard Tinsley.
„ Geo. Alfred Browne.
„ Henry Hannan.
„ Edward Kitchin.
„ Frank Bottomley.
„ Andrew Hume.
„ Thomas Herbert Lewis.
„ Wharton Wm. Foister.
Mr. John Legge.
„ Edmund Woods Goldsmith.
„ John Edwards.
„ George Sandeman.
„ John Henry Wilson.
„ John Carr.
„ Edward Hugh Leach.
„ Kay Lees.
„ Thomas Barritt Stone.
„ Philias Martial.
„ Frederick Garside.
„ Alfred Jones.

GLASGOW VETERINARY COLLEGE.

Mr. William Clay.
„ John McDougall.
„ John Baillie Hamilton.
„ James Storrar.
„ Robert John McGuire.
„ William McQuiston.
Mr. Wm. Ferguson McGhee.
„ William Miller.
„ Bernard Patrick J. Mahoney.
„ Richard Hughes.
„ Charles Currie.
„ Alexander Cochrane.
Mr. Jeremiah McCarthy.

THE FITZWYGRAM PRIZES.

THE notices and regulations with regard to the above prizes were issued to graduates of the Royal College of Veterinary Surgeons who had obtained their Diploma since May 1876, and also to the students of the respective veterinary schools.

The examiners appointed were James Collins, Esq., P.V.S. Army, James Lambert, Esq., 17th Lancers, and Professor Duguid, of the Brown Institution.

The superintendents were the Secretary of the Highland and Agricultural Society, Edinburgh, and the Secretary of the Royal College of Veterinary Surgeons.

The second part of the examination was held in London.

Fourteen names were sent in.

From the London Veterinary College the names of seven candidates were entered, of whom five competed and two withdrew. From the Edinburgh Veterinary College three candidates were entered, but subsequently withdrew. From the New Veterinary College, Edinburgh, four names were entered, and two withdrew.

The written examinations took place in London and Edinburgh on Wednesday, March 21st, and Thursday, 22nd.

The following is the result and the number of marks obtained by each competitor :—

LONDON VETERINARY COLLEGE.

	Nos.	Anatomy. 300	Physiology. 300	Pathology 300	Chemistry. 150	Materia Medica. 75	Botany. 75
Mr. Joshua A. Nunn, M.R.C.V.S.	48	200	161	230	71	45	33
Mr. Lawrence Clark Tipper	49	185	168	150	101	44	50
Mr. Chas. Edward Smith..	51	170	180	90	89	66	56
Mr. Richard Glover.....	53	240	178	170	115	66	51
Charles Sheather	54	125	190	150	121	69	59

NEW VETERINARY COLLEGE, EDINBURGH.

	Nos.	Anatomy. 300	Physiology. 300	Pathology. 300	Chemistry. 150	Materia Medica. 75	Botany. 75
Mr. William Atkinson.....	40	115	135	100	63	26	29
William Henry Roughsedge	41	185	143	150	94	45	48

The only competitors who were eligible for the *viva-voce* examination were Mr. Richard Glover and Mr. L. C. Tipper, both from the London Veterinary College.

The *viva-voce* examination, arranged to take place at "the Brown Institution" on April 10th, had to be deferred until July 27th, in consequence of a severe accident to one of the competitors.

The report of the *viva-voce* and practical examination, for which 600 marks were assigned, was as follows :—

	Nos.	Diagnosis of Disease. 200	Shoeing. 100	Examination for Soundness. 300	Selection of Horses for specific purposes. 100	Total.
Mr. Richard Glover	53	100	30	100	50	280
Lawrence C. Tipper.....	49	95	50	100	50	295

	First Examination.		Second Examination.		Total.
Mr. Richard Glover.....	820	...	280	...	1100
Mr. Lawrence C. Tipper	698	...	295	...	993

RESULT.

First Prize ..... Mr. Richard Glover..... £50.
Second Prize ..... Mr. Lawrence C. Tipper... £30.

WM. HENRY COATES, *Secretary.*

NEW VETERINARY COLLEGE, EDINBURGH.

PRIZE LIST, SUMMER SESSION, 1877.

ANATOMY.—*Medallist:* Edward Kitchin. *Certificate of Merit:* Frank Bottomley, William Henry Moore, William Henry Bridge.

BOTANY.—*Medallist:* Thomas Herbert Lewis. *Certificate of Merit:* Edward Hugh Leach, John Carr.

MATERIA MEDICA.—*Medallist:* Thomas Herbert Lewis. *Certificate of Merit:* William Henry Bridge.

Eleven candidates presented themselves for the Minor Examination under the old rules, and nine passed.

Seventeen candidates presented themselves for the First Examination, and sixteen passed.

Reviews.

VETERINARY NOTES FOR HORSE-OWNERS: AN EVERY-DAY HORSE-BOOK. By M. Horace Hayes, Capt. Bengal Staff Corps. London: Thacker & Co., 1877.

Captain Hayes, who has been studying veterinary medicine at the Edinburgh New Veterinary College, has compiled a handy little book for the use of horse-owners, which may prove of much service to them when they cannot obtain the assistance of a veterinary surgeon, as well as afford them some notion of many of the ailments to which the horse is exposed, and the manner in which they may be best treated. The work is dedicated to Professor Williams, whose views with regard to the majority of the maladies referred to, as well as their treatment, are those here given, and from whose works copious extracts are made. We do not know that there is anything particularly novel to members of

the profession in the book, which is intended for the use of amateurs. Perhaps the utility of ipecacuanha in assisting in relieving congestion of the liver, may be new to some practitioners. On the advice of Veterinary Surgeon Kettlewell, of the Bengal studs, Captain Hayes tried that agent in several cases of liver congestion, and always with marked success. Christison had previously pointed out the action of the drug on that organ. The dose recommended is 1½ drachm in bolus twice a day for a week.

The book has several well-drawn woodcuts; and the frontispiece, giving a representation of good fore-legs, is particularly well executed. Altogether we think the "Notes" will fully serve the end for which they were intended.

A Dictionary of Hygiene and Public Health. By A. W. Blyth, M.R.C.S., F.C.S., etc. London: C. Griffin & Co., 1876.

The great importance which sanitary science has now assumed renders works of reference on hygiene and public health absolutely necessary to the student of what may be designated State medicine. Among the many books which have already appeared on this subject, the Dictionary by Dr. Blyth must be reckoned one of the best and most useful.

Written on the plan of Tardieu's celebrated "Dictionnaire d'Hygiène Publique," it is in several respects an improvement on that justly esteemed work. It comprises everything necessary to be known by the hygienist in sanitary chemistry, engineering, and legislation, with the dietetic value of foods and description of the means for the detection of adulterations. The author has largely availed himself of every convenient source of information; though had he consulted writers on comparative pathology and Veterinary Sanitary Science, he would have avoided some errors and made his work more complete.

However, as it stands, it is a most valuable and exhaustive compendium of knowledge on a subject of the deepest importance to all civilised communities; and embracing, as it does, everything connected with the preservation of health and the prevention of disease, it has claims on the attention of the veterinary profession, the members of which will find much valuable instruction in its pages.

Proceedings of Veterinary Medical Societies, etc.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of the above Society was held, on the 27th June, 1877, at the Blackfriars Hotel, Manchester, Mr. Tedbor Hopkin, President, in the chair.

The following gentlemen were present:—Messrs. E. A. Woolner, Chas. Ashworth, Heywood, Alex. Lawson, Sam. Locke, W. A. Taylor, and Tom Taylor, Manchester; Hugh Ferguson, Warrington; W. C. Cartright, Whit-

church; J. B. Taylor, Ashton-under-Lyne; Jas. Marshall, Knutsford; John Paulden, Bury; John Burnell, Jas. Hart, Oldham; Beard, Macclesfield; W. Woods, Wigan; A Briggs, Bury; and the Secretary.

Letters of excuse were read from Messrs. Welsby, R. Reynolds, M. J. Roberts, and John A. Taylor.

Messrs. J. C. Atkinson and Beard, proposed by Mr. Locke and seconded by Mr. J. B. Taylor; Mr. Peter Taylor, proposed by Mr. A. Taylor and seconded by Mr. Woods; Mr. Faulkner, proposed by W. A. Taylor, seconded by W. Woods; Mr. Thos. Greaves, proposed by W. C. Cartwright, seconded by Geo. Darwell; Mr. Jas. Marshall, proposed by J. B. Taylor, seconded by S. Locke; Mr. Thomas, proposed by Tom Taylor, seconded by J. B. Taylor, were duly elected members of this Association.

The business on the circular was then proceeded with. The report of the committee formed at the last meeting to consider the advisability of changing the place of meeting not being thought of a satisfactory character, Mr. W. WOODS proposed, and Mr. ALEX. LAWSON seconded, "that the matter be referred back to the committee." The motion was carried.

Mr. W. A. TAYLOR, secretary to the Election Committee, handed in his report as follows:—"The committee apointed at the last quarterly meeting to take means to ensure the election of Mr. Peter Taylor—the chosen candidate of the Society—as member of Council of the R.C.V.S., and to act in concert with the Yorkshire, Liverpool, and Midland Counties Societies as regarded the election of the representative candidates of the four societies collectively,—met on several occasions. Your committee think it almost superfluous to state that their labours were crowned with success, as all interested must have seen with pleasure and satisfaction the positions occupied on the return lists by the Society's candidates, viz.,—

Mr. Peter Taylor	560	Mr. Rich. Reynolds	458
„ Jas. Cuthbert	484	„ Francis Blakeway	440

Signed, W. A. TAYLOR, *Secretary to Committee.*"

Mr. TOM TAYLOR then proceeded to give the history of a case of "Dumb-madness," in which some unusual symptoms were observed; the principal being lameness in both fore-legs, due to a semi-paralysed condition of the limbs. There were also present the general symptoms of this disease: such as snapping and dropping of the lower jaw. The discussion following on the recital of this case lapsed into an instructive and very interesting one on the "spontaneous origin of Rabies." A variety of opinions was given on this subject, both for and against; but no definite conclusion was come to, although some light was thrown on this obscure disease.

Mr. TAYLOR then referred to a case of Tetanus he was treating with nitrite of amyl; and although he had given that supposed remedy a fair trial, he did not hope to save his patient. Some discussion followed on the action and mode of administration of this comparatively new drug, which had been given in this—as in Mr. Alex. Lawson's case—by subcutaneous injection. A general review of most of the remedies used in the treatment of Tetanus did not elicit anything of a satisfactory character.

Mr. W. A. TAYLOR exhibited a dog which had on the sclerotic coat of the eye a well-formed dermoid tumour.

Mr. DACRE read a short paper describing a case of so-called "Azoturia" in a gelding. The subject was a well-bred horse in full working condition, being fed on a liberal supply of beans and oats. Having a cracked heel, he was kept from work for five days, receiving during that time his usual allowance of food. On the sixth day, being sent a short journey of two miles, he fell in the shafts, was seized with convulsive fits of a violent character; the muscles of the quarters, hind-legs, loins, and neck, were hard and rigid; he

continued straining, the bowels being sometimes protruded through the anal opening. The pulse ranged from 50 to 100; and the temperature gradually rose to 104°. On the catheter being passed, an hour after seizure, the urine was found to be of the colour and consistency of linseed oil, but had no unusual odour. An hour afterwards a considerable change had taken place—the urine then being of a dark coffee colour, and having a peculiar smell: on being heated in a test tube it became quite solid. The animal was bathed in perspiration, which had a urinous odour; and the fit increased in intensity up to the time of death, which occurred in seven hours after the attack.

A *post-mortem* examination, made three hours after death, revealed a singular condition of the kidneys: they were of a dull reddish-brown colour, and on pressure in the hand were easily broken down, emitting a crackling sound; air bubbles appearing on their surface, due to decomposition of tissue. The bladder was empty and contracted, its mucous membrane having a bluish tinge. All the other organs were comparatively healthy.

A lengthened discussion followed the reading of this paper; and, as much was still to be said on the subject, it was agreed to adjourn its further discussion until the next quarterly meeting. A vote of thanks to the chairman terminated the proceedings.

W. DACRE, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE quarterly meeting in connection with this Society, was held at the Queen's Hotel, Leeds, on Wednesday, July 11th; the President, Professor Williams, in the chair.

After the routine business had been completed, Professor WILLIAMS made a few remarks on the recent election of Members of Council, and hoped that moderation would be displayed in the selection of candidates in the provinces for future Council honours.

An essay on "Chronic Diuresis," written by Griffith Evans, M.D., Veterinary Surgeon, Army Service Corps, was then read by Mr. William George Schofield, of Pontefract, which will be found in our "Original Communications," p. 174.

A discussion followed, in which most of the members present took part.

Professor WILLIAMS attributed the emaciation of the body, in Chronic Diuresis, to the tissue products present in the urine. He never had much confidence in the efficacy of clay-water, but considered that the observations taken by Dr. Evans clearly showed its utility. When arising from Indigestion, Professor Williams found iodine beneficial, more particularly after the exhibition of a mild aperient and antacid.

Mr. M. E. NAYLOR, Wakefield, thought that the observations taken by Dr. Evans were not possible in general practice.

The discussion was continued by Messrs. Jas. Freeman, Anderton, Cuthbert, Carter, and Walker.

It was proposed by Professor WILLIAMS, seconded by Mr. NAYLOR, That the essay be sent for insertion in the veterinary periodicals.

A vote of thanks to the chairman concluded the proceedings.

WM. GEO. SCHOFIELD, *Hon. Sec. pro tem.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly council meeting held on August 1st, the following report was received from Professor Brown, and ordered to be published:—

"An outbreak of Cattle Plague was discovered on July 14th, on premises

in Norfolk Street, Bethnal Green, among ten cows, all of which were found to be affected with the disease in various stages, and one, to which further reference will be made, died soon after the existence of the disease was detected. The animals were first seen by Mr. Shaw, the inspector of the local authority, and subsequently by the chief inspector of the Veterinary Department, and also by Professor Simonds, Mr. Priestman, and Mr. Rayment (inspector of the Metropolitan Market), all of whom agreed in the opinion that the symptoms and *post-mortem* appearances indicated Cattle Plague of the most pronounced type. The true character of the disease having been determined, the source of the infection only remained to be investigated; and, considering that there was a long interval between the last outbreak and the one immediately preceding it, a suspicion of the re-introduction of contagion from abroad was immediately entertained. All the facts, however, are in opposition to this idea. Cattle from Germany and Belgium, the only countries through which Cattle Plague is likely to reach us, are excluded; and, further, it has been ascertained that no foreign animals had been recently introduced into the shed where the disease appeared. The only other assumption is that the contagium of Cattle Plague had been preserved in some way in the Bethnal Green district; and the inquiry which has been made has led to the discovery of circumstances which favour this view. Taken in the order of their occurrence, the facts are as follows:—The last reported case of Cattle Plague in the East of London occurred on May 17th. About that time there were eleven cows in the shed in Norfolk Street, where Cattle Plague had not, up to that time, broken out. Early in June Pleuro-pneumonia was reported to exist in the dairy, and at the time of the inspector's visit only eight cows were in the shed; one of them was affected with lung disease, and was slaughtered. The missing cows had been sold, it was stated, to a butcher, probably on account of Pleuro-pneumonia. Seven cows remained, apparently in good health, and towards the end of June a cow, the one which died of Cattle Plague on July 14th, was added to the stock, and in the beginning of July two more were purchased, making the number up to ten, which were in the shed when Cattle Plague was detected.

"Suspicion was naturally directed to the three newly-purchased cows, and an inquiry was at once instituted as to their origin. Two of them, it was ascertained, came from perfectly healthy premises on July 3rd; the other one has a history which quite justifies the assumption that it was infected when it was brought into the shed in Bethnal Green. The animal was purchased of a jobber and drover, who has a small slaughterhouse in Bethnal Green, where he disposes of such animals, cows chiefly, as he can purchase advantageously from time to time. It will not be unfair to suggest that during the existence of Cattle Plague in the district, many cows affected with the disease were killed and dressed in these premises. The cow in question was bought by the dealer at Romford Market, and put into the slaughterhouse for the purpose of being killed. On the following day the cow appeared to have a good bag of milk; and the dealer, instead of fulfilling his first intention, decided that the animal would be more valuable for dairy purposes, and accordingly sold her to the dairyman in Norfolk Street, to whose shed she was taken direct from the slaughterhouse. The date of purchase of the cow has not been clearly made out. The drover asserts that he bought the animal on Wednesday, June 27th. The dairyman thinks that she came into his shed on June 23rd. It is a fact that she was ill on July 10th, and died on July 14th; and it is further certain that the disease had extended to all the animals in the shed when the first inspection was made. The whole history of the outbreak is quite consistent with the idea of an infected animal having been introduced into the shed about the end of June.

"Every precaution has been taken to prevent the spreading of the disease. The slaughterhouse and premises from which the cow was taken have been disinfected, a district round the dairy has been declared an infected area, and the movement of cows out of any cowshed in the area has been stopped. The order which prohibits the removal of cattle, sheep, and goats out of the Metropolis still remains in force, and also the order which makes the Metropolitan Market a place for the sale of animals exclusively for slaughter.

"Cattle Plague has again appeared in Germany, near the Polish frontier, having been introduced, it is believed, by meat from Poland.

"Active measures have been taken by the German Government to prevent the extension of the disease."

Jurisprudence.

GLANDERS OR INFLUENZA.

HENRY LAIDLAW, jun., son of the proprietor of extensive livery stables at Bournemouth, was summoned at the Wimborne Petty Sessions, on June 15th, by Superintendent Hammond, inspector to the local authority under the Contagious Diseases (Animals) Act, 1869, for causing a horse which was then affected with a contagious disease—to wit, Glanders—to be removed on the highway, at Lytchett Matravers, on the 7th of May. Mr. H. T. Trevanion defended.

Mr. George Ames, horse-dealer, of Lytchett Matravers, said defendant brought a horse to his house about the 7th of May. Defendant told him there was a doubt about the horse; and as he did not want to kill it, he asked him if he could put it somewhere away from his stables. He did so. Defendant told him to get an experienced veterinary to see the horse.—Cross-examined by Mr. Trevanion: He sent for Mr. Gillingham, who came to see the horse a day or two afterwards. He said the horse was suffering from Influenza, and he (witness) applied blisters to the horse's throat twice. Mr. Maynard came to see the horse about a fortnight afterwards. He sent for him because he was told Mr. Blake had seen the horse and said it was glandered. After his subpœna had been served on him, he sent for Mr. Aubrey to examine the horse. By the advice of Mr. Maynard he put a donkey in the same building with the horse; and after cutting off the hair on a portion of the donkey's neck, he rubbed in some of the discharge from the horse's nostrils. He saw the donkey that morning, and there was no unhealthy result. The horse was now in better health than when it came there. There was no smell from the mucus. He never thought the horse suffered from Glanders, and was convinced that it was not so diseased.

P.S. Short proved that he served a notice on Mr. Ames on the 4th of May not to remove the horse under any circumstances.

The Deputy Chief Constable was about to call a witness to prove the removal of the horse; but Mr. Trevanion admitted that the horse was removed from Bournemouth to Mr. Ames's premises. Mr. Hammond said that, as the inspector, he objected to the inoculation of the donkey, as Mr. Blake was not present when it was done.

Mr. Richard Stone Blake, veterinary surgeon, of Wimborne, stated that, on the 12th of May, P.S. Short requested him to go to Lytchett Matravers to see the horse. He went there on the 13th, and examined the horse. He found a great discharge from the left nostril, and the doorposts and walls of the stable were covered with it. The glands under the jaw were swollen, and sticking to the sides of the jaw. They were the more swollen from having

been blistered. The horse's general health was not much affected. There was no fever; and from the absence of symptoms of Influenza and the nature of the discharge from the nose, he concluded that the horse was suffering from Glanders, and gave a certificate to that effect. He believed there could be no better test than inoculation of a donkey, if it was properly done. From his long experience, he had no doubt in his own mind that the horse was suffering from Glanders. He should think the horse had been suffering from the disease for three or four weeks previous.—Cross-examined by Mr. Trevanion: Many cases of Nasal Gleet had been mistaken for Glanders, as it was very difficult to distinguish between the two. He did not use his watch, but he should say the pulsation of the horse was about forty-two or forty-three to the minute. The normal condition would be about thirty-eight. In Glanders the membrane of the nose was, as a rule, more of a leaden colour than red. The most eminent men sometimes made mistakes in cases of Glanders.

Mr. Ames was re-called and questioned as to the inoculation of the donkey. He said he shaved the hair off the donkey's neck with the razor and drew the blood, and then rubbed in the mucus from the horse's nostrils with his fingers.

Mr. Henry Laidlaw, sen., said he was a livery stable-keeper at Bournemouth, and he had nearly 100 horses at the present time. Some time since he had about thirty horses slaughtered for supposed Glanders, by order of the authorities for the county of Hants. The horse now in question, which was called "Charley," he bought of Mr. Corbin some months ago. In April Mr. Perry, of Lymington, had a horse with him at livery which was suffering from a very bad case of Influenza. Some of the horses near, six in all, and "Charley" among them, were affected. Mr. King treated Mr. Perry's horses for Influenza, and Vesey attended his horses and treated them for the same complaint. His son intended to ride "Charley" in the Yeomanry training at Winchester, and the horse was put at Mr. Boyes, at the Sea View, for rest. He saw the horse every day, and in his opinion it was suffering from a bad form of Influenza. He lanced the horse's throat with a penknife himself, and let out the matter. He had no wish to surreptitiously remove the horse, and he drove the sergeant of police over on the Sunday after to see it. He had not the slightest idea the horse was suffering from Glanders, neither did he believe so now.

Mr. John Thomas King, honorary veterinary surgeon of the Bournemouth branch of the Society for the Prevention of Cruelty to Animals, who was not professionally engaged in the case, but gave his evidence to oblige the Bench, said he attended a horse for Mr. Perry at Mr. Laidlaw's stable more than two months ago. He treated the horse for Strangles, and not Influenza.

Mr. John Gillingham, an unqualified veterinary surgeon, of Spetisbury, said he had practised for thirty-two years, and had lots of cases of Glanders. On the 10th of May he examined the horse at Mr. Ames's. He found a slight discharge from the left nostril and a little enlargement of the glands, which he considered could be treated and made right. If a glandered horse were treated for a month for Influenza it would get worse instead of better. He had never known a horse get better from Glanders, either with or without treatment.—Cross-examined by the Deputy Chief Constable: He had never known a horse that was badly glandered go on working for a long time.

Mr. William Maynard, veterinary surgeon, of Romsey, said he examined the horse on the 26th of May. He found a discharge from the near nostril, thin in nature, and not adhering to the nostril. There were no signs of ulceration on the mucous membrane of the nostril. The pulse was thirty-eight to the minute by his watch, and the temperature of the body 104. There was no enlargement of the glands under the jaw. He gave his opinion that the horse was recovering from an Influenza cold. The matter

dropping from the horse's nostrils fell into a pail of water, and floated. That was one of the acknowledged tests: if it floated it was not Glanders; if it sank it was a proof it was Glanders. He never heard of recovery from a case of Glanders. The disease would have increased if the horse were treated for Influenza, when suffering from Glanders.—Cross-examined by the Deputy Chief Constable: The matter dropping in the water was not an unfailing test, but inoculation of a donkey by a professional man would be.

Mr. Benjamin Aubrey, veterinary surgeon, of Blandford, said he examined the horse on the 5th of June. To a casual observer there seemed very little the matter. The pulsation was thirty-eight to the minute, and the temperature 101. There was no discharge from the nostrils whatever, and the horse had a very good appearance. There was no enlargement of the glands, and no ulceration of the nostrils. His decided opinion was that the horse was not glandered. With the Glanders there would have been more constitutional disturbance, and also a discharge.—Cross-examined by the Deputy Chief Constable: He had seen many cases of Glanders, but he had not seen a case where a discharge was not continuous.

Mr. Walter Charles Boyes, of the Sea View, proved that Mr. Vesey, who had since died, saw the horse at his stables on the 6th of May, and the horse had been there about a week then.

The Bench adjourned the case till the next Court, to enable a veterinary surgeon to apply the crucial test of inoculating the donkey with the discharge from the nostrils of the horse.

Mr. Trevanion said the defendant was summoned to appear at Christchurch Petty Sessions on Monday, for removing the same horse in the county of Hants, and it would be absurd to go over all the evidence again.

Deputy Chief Constable Hammond said he would write to the Superintendent of Police at Ringwood, and ask him not to go on with the charge till the result of the inoculation was known.

At the sessions held on June 22, *Henry Laidlaw, jun.*, of Bournemouth, again appeared in answer to a charge of causing a horse, which was then affected with contagious disease—to wit, Glanders—to be removed on the highway at Lytchett Matravers, on the 7th of May. Mr. H. T. Trevanion defended. The case was adjourned from the last court day, there being contradictory evidence as to whether the animal was or was not suffering from Glanders, and it being desired to test the matter by inoculating a donkey. Since that occasion both a donkey and mare had been inoculated with matter taken from the horse. Deputy Chief Constable Hammond prosecuted, and called

Mr. R. S. Blake, veterinary surgeon, of Wimborne, who said he inoculated a donkey and an old mare on the Monday following the last court day, in the presence of Mr. Aubrey, veterinary surgeon, of Blandford, Deputy Chief Constable Hammond, and a policeman. Mr. Aubrey arranged to meet him on the following Monday to see the effect of the inoculation. Witness went to the place at the appointed time, eleven o'clock, and waited till ten minutes to twelve, but Mr. Aubrey did not arrive. On his return to Wimborne he received a telegram stating that Mr. Aubrey was unable to come, but not giving any reason for it. He had found the doors of the stable were double ones, and P.S. Sharpe managed to get the bottom one open without breaking the lock. He examined the donkey and found it had Farcy. The Glanders of the horse "Charlie" were very much worse, and there were five or six ulcerations; it had also a bad cough. The mare that had been inoculated was in another shed, which was also locked; this animal also was suffering from Farcy. Having examined the horse, and having seen it since, and inoculated another horse and donkey, he was able to swear that they

were now all three affected with Glanders.—Cross-examined: He considered thirteen or fourteen days after inoculation a proper test. Assuming that the matter with which he inoculated the donkey was impure, that might have produced suppuration. The glandered horse and the donkey both remained in the same building. The Glanders of the horse "Charlie" had increased, and it had a peculiar cough, quite distinct from that of Influenza, Sore Throat, or Bronchitis. The mare had swollen feet. He arrived at the conclusion that the horse was glandered, from the nature of the discharge, the ulceration in its nose, the duration of the discharge, adherence of the glands, and the enlargement of the jaw. He considered this to be a case of Chronic Glanders. He gave an opinion that a horse belonging to Mr. Eaton, of Bournemouth, was suffering from Glanders; and two other persons who were called in said the same. It was perhaps three months ago that he made that examination. He had since seen the horse working on the beach, but he still believed it was Glanders from which it suffered. When he inoculated the donkey, he thought it likely the animal would be dead in a week.

Mr. G. J. Gould, veterinary surgeon, of Southampton, said he had examined the three animals that morning. He found "Charlie" suffering from Glanders in the severe and chronic form. The animal had about six or seven ulcerations in the near nostril; they were plain to the naked eye. There was also an enlargement of the glands. The pulse was at 40, and the temperature at 101°. He had previously examined the horse on the 26th May for Mr. Ames, and the temperature was then 104°. In these infectious diseases there was always a variation of temperature. The donkey had Farcy buds on the neck, and the cart-mare was similarly affected, and showed symptoms of disturbed breathing. The mare had taken the disease in a more acute form than the donkey. The animals might live several days or weeks, but it would be cruelty to keep them alive. The average time which an animal lived after being inoculated as these had been was twenty-one days; but there were cases on record where they had lived weeks or months. Cross-examined: A horse with Chronic Glanders might live twenty years, and be capable of affecting animals around, who might take the disease in the acute form and die of it. The mare had Farcy buds on the neck, showed symptoms of disturbed breathing, and had fevered feet. Its pulse was at 68, and that of the glandered horse, "Charlie," at 40. This would not be accounted for by the mare's having fevered feet, but from its having the Glanders more severely than the other animals.

Mr. William Maynard, veterinary surgeon, of Romsey, was called on behalf of the defendant, and said he had examined the animals. He saw no difference in the condition of "Charlie" that day than on the 26th of May, except that the discharge was much less, and the horse was looking better; its pulse was fuller. There was no ulceration of the mucous membrane of the nostril. The horse was better than when he saw it last, and it was his candid opinion that it was not suffering from Glanders. If the animal had been suffering from Glanders, the weather we had had lately would have increased them, the horse being shut up in a close place. He made an examination of the donkey. Where it had been inoculated an abscess had formed, from which matter was discharging. This suppuration might be caused without the animal being inoculated with Glander virus. He should have expected to have found Farcy buds had the animal been affected with Glanders. The time it usually took to cause the death of a donkey which had been inoculated with Glander virus was from four to nine days. The temperature of the animal was normal, and it was feeding well. If it had been inoculated with Glander virus, it must have died by this time. The mare had a swelling about the neck, and enlargement of the muscles; but this might have been caused by the lancet

having been inserted rather deep, and the animal having to feed off the ground. He saw no ulceration in the nostrils of the horse "Charlie," but there was an abrasion. He noticed no difference in the mare's breathing. Neither of the animals were affected with Farcy. Cross-examined: The wound on the mare's neck doubtless arose from poisonous matter taken from the horse, but not glander matter.

Mr. Gould, in answer to Mr. Trevanion, said, with reference to the horse at Bournemouth, he concurred in the opinion that it was suffering from Glanders, and he was still of that opinion. It was three months ago when he saw it. It was working, but there was no inspector in Bournemouth now.

The magistrates retired for a short time, and on their return the Chairman (the Rev. C. J. Glyn) said they had fully considered the case, which was a most important one. Mr. Laidlaw was a man having an immense deal of property at stake, and they considered that as there were three gentlemen, all properly qualified veterinary surgeons, who had given their opinion that the horse was not glandered, and as there were two persons who were equally positive that the horse had Glanders, they must write to the Privy Council to send their regular officer down to give his opinion on the matter.

The case was then adjourned for a fortnight.

At the Wimborne police court, on July 7th, *Henry Laidlaw* was again charged with having allowed a glandered horse to be used on the highway at Lytchett Matravers, on the 7th of May.

The Chairman said the Bench was not constituted exactly as it was upon the last occasion, and asked Mr. Laidlaw whether he objected to the case being heard by the magistrates then present.

No objection was raised.

Deputy Chief Constable Hammond said the Privy Council had objected to send down one of their inspectors; they did so only in cases of Cattle Plague. A gentleman, however, who was perfectly independent in the matter, was present; he had examined the animals, and would give evidence.

Mr. Laidlaw objected to any other person than the Privy Council's inspector being called, no notice of the matter having been given to him.

Deputy Chief Constable Hammond wished to state that the gentleman he proposed calling was a perfect stranger to him, and a person with whom he had never had any conversation. This gentleman was a perfect stranger to himself, and also, he believed, to Mr. Laidlaw; and he (Mr. Hammond) had not accompanied him when he went to inspect the animals. As he could not get a man down from London, he had communicated with the Chief Constable, who had acted in this matter.

In answer to Mr. Laidlaw, Mr. Hammond said the serjeant of police accompanied the gentleman who made the inspection.

Mr. Laidlaw protested that notice should have been given him of this, and applied that the case might be adjourned for a month. The donkey and mare were each alive and well, although one of the witnesses had said the donkey could not live ten days. Mr. Laidlaw further said he objected to the evidence of the gentleman in question being taken.

The Chairman said the Bench would like to hear the evidence.

Mr. James Rowe, veterinary surgeon, of Dorchester, said he had been requested to visit some animals at Lytchett Matravers, and he had gone that morning and inspected them. He found a bay hack horse suffering from Glanders. He saw three animals altogether—the hack, a cart-mare, and a donkey. The hack was suffering from the sub-acute form of Glanders in an advanced state. He carefully examined the horse, and found a discharge from the near nostril, which, from the length of time the disease had been going on, had become thick. There was an enlargement of the sub-maxillary

gland ; it was detached, and not adherent to the jaw. He examined the lungs carefully, and found they were both extensively diseased. There were many spots of ulceration on the membrane of the nostril. The animal had a short, dry cough, and became distressed after exertion, its breathing being very bad. He had known horses suffering from Glanders to continue in this state for some time. He tested the horse's pulse ; it was at 45, or slightly above the normal state. The temperature was 101½°. In other respects the horse was looking fairly well.

Deputy Chief Constable Hammond : From your experience how long do you suppose this animal has been suffering from Glanders ?

Witness : It is a matter of months.

By Mr. Laidlaw : Keeping a horse suffering from cold or catarrh in a close stable during hot weather might produce Glanders. Glanders was caused by close stables, improper feeding, contagion, or inoculation. The close penning of a horse up during hot weather would conduce towards this disease.

Sir E. Greathed : Do I understand the horse has not been attended to ?

Mr. Laidlaw said it had not been allowed to be attended to for three weeks.

Deputy Chief Constable Hammond said this was wrong ; the only authority he had exercised was that of preventing the animals from being moved.

Witness said he found everything favourable to the horse living for some time ; there was plenty of fresh air.

Mr. Laidlaw remarked that this had only been during the last three weeks.

Witness proceeded to say he examined the donkey, and found a large ulcerated spot about half way down the neck on the left side, and a thickening of the glands down to the chest. They were very much enlarged, and very painful on pressure. Near the chest they were about half as large as his wrist. He should imagine the ulcer was caused by inoculation.

By the Bench : The result of inoculating a donkey from a glandered horse would be the same as what he saw in this animal, but the donkey had not taken the disease in the severe form. The disease would manifest itself about six or seven days afterwards.

Witness continued : The temperature of the donkey was 140° and the pulse 108. He believed the donkey to be suffering from Farcy. Farcy would produce Glanders by inoculation, and *vice versâ*. He thought a donkey inoculated with virus taken from a horse suffering from Glanders in the sub-acute form might live a long time. He thought the donkey in question would live for a long time yet. The only symptom it showed was Farcy, and he was of opinion that this resulted from inoculation.

By Deputy Chief Constable Hammond : The same appearance would not be produced had the donkey been inoculated with virus taken from a horse suffering from Influenza, and supposing the wound to have been deeply cut. He was most distinctly of opinion that the donkey had been inoculated from a glandered animal.

By Mr. Laidlaw : He came from Dorchester, and was a veterinary surgeon in large practice. He had inoculated a donkey himself, and at the end o seven days he had it killed. A donkey might live some time with the Glanders ; he had read of this case in the papers, but he had not felt particularly interested in it ; he had read the evidence, and he knew that morning that he was going to inspect the animals in question. He would positively swear that the cutting of the donkey too deeply, when inoculating, would not produce swelling of the specific form which he had seen.

Mr. Laidlaw : Would you be surprised to hear that one of your profession offered to lay a wager it would be dead in ten days after the inoculation ?

Witness: We are not supposed to be surprised at anything now-a-days.

Proceeding to speak of the cart-mare, witness said he found it suffering from Farcy in a very aggravated form. He counted twenty-eight Farcy buds; he did not reckon the small ones: eight of them were sloughing, and others were discharging. He did not think there could be the least doubt but that this was caused by inoculation with Glander virus. It was generally supposed that a donkey took inoculation quicker than a horse, but it was not so in this case. There was a bluish appearance of the membrane of the nostril, which indicated to him that the disease was assuming the form of Glanders. He thought the mare would become very badly glandered in a short time, and that it would not live very long.

By Deputy Chief Constable Hammond: He thought the animals ought not to be kept about, but that they should be killed. It would be more humane to kill them than to keep them about. He did not know exactly what amount of pain they were suffering.

By Mr. Laidlaw: There were three ulcers in "Charlie's" nostrils. He saw that the mare had been suffering for several months before from Acute Laminitis. He thought it was utterly impossible to say how long a glandered animal could live, for he did not think any one could arrive at a correct conclusion. He believed the donkey was feeding when he saw it. If a person anxious to make a good job of the thing in inoculating made a great wound in the neck, it would not cause ulceration, but there would be a sloughing wound.

Deputy Chief Constable Hammond asked if it would be necessary for him to prove that the witness was shown the animals in dispute.

Mr Laidlaw said he would admit this.

After a short consultation the Chairman said the Bench had given the case their very best attention, and upon the evidence before them they believed the horse was glandered, and they must convict. Of course they did not wish to convict in the full penalty, which was £20, their only object being to show their opinion that the animal ought not to have been used under the circumstances. They fined defendant £5 and costs.

Mr. Laidlaw said he begged to give notice of appeal.

The Chairman, in answer to a question, said the animals must not be removed.

Bryan *v.* Holden.

This was an action brought by the plaintiff, a horse dealer at Montgomery, to recover from the defendant, an ironmaster at West Bromwich, the sum of £180, the price of a pair of black horses sold to him in May, 1875. The action was tried at the Welshpool Summer Assizes last year, when a verdict was found for the plaintiff for the amount claimed; but on the application of the defendant a new trial was granted, on the ground of misdirection by the judge before whom the action was tried.

The case came on for trial at the last Chester Assizes, before Lord Chief Baron Kelly and a special jury. Mr. Swetenham and Mr. Marshall (instructed by Mr. E. M. Jones, of Welshpool) appeared for the plaintiff, and Mr. McIntyre, Q.C., and Mr. Coxon (instructed by Messrs. Caddick, of West Bromwich) for the defendant.

The plaintiff's case as to the sale of the horses being admitted by the pleadings, Mr. McIntyre briefly stated the case for the defendant, and called

Thomas Edward Holden, the defendant, who said: In the month of May, 1875, I was desirous of purchasing a pair of carriage-horses. On the 10th May I went to the plaintiff's, at Montgomery, accompanied by my brother,

and Smith, my groom. I went to the plaintiff's farm. Saw a pair of bays and a pair of black horses. The black pair were put into a break. Before they were put into the brake plaintiff said they were sound. While the break was away he said they were "a good, sound, honest pair of horses; one wanted more whip than the other." I bought them at £180. The horses arrived on the 12th. Smith went to fetch them from the station. When they arrived at home Smith called me to see them. The one seemed a bit distressed. The next day the horses were put into the carriage to go to Birmingham. When we got to Soho Hill one of the horses broke down, and we had to stop. We had a struggle to get to Hockley Hill. There we had to get out, and proceed to Birmingham by train. We left them at Mr. Howse's, at the top of Hockley Hill. Smith took the horses home. When I got home I noticed that the one that died first had got what I thought was Influenza. There was a slight running at the nose. I sent for Kendrick, the farrier. The horse died on the 17th of May. I went down to Montgomery on the 8th June. I did not see the plaintiff. The second horse fell ill in about a week or so. He fell away like the first. He was attended by Mr. Stanley, Mr. Collett, and Mr. Bradley. He was killed on the 13th July. I had a bay horse worth £60. He was kept in the same stable. Till the black horses came the bay never had anything the matter with him. He died of Glanders and Farcy. He fell ill at Llandudno. I had portions of the stable pulled down by the advice of the veterinary surgeons. The expense was £70. Mr. Collett's bill was £5 5*s.*, Mr. Stanley's £1 1*s.*, Mr. Kendrick's £2 9*s.*, Hollier, for painting, etc., £13, and £9 9*s.* for the keep of the horses, making, with the value of the bay horse, £164 4*s.*—Cross-examined by Mr. Swetenham: Had had previous dealings with plaintiff, and recommended Mr. Jordan to buy some horses from him. They came up in the same train. There were other horses in the same stable, and they could smell each other. Did not ask Bryan for a warranty. He said I could send them back if I liked. I did not go to look for another horse on the 15th of June. I went to see him about the horse that died. I was never shown another black horse, nor ever went to buy one. I did not mention the word Glanders to plaintiff. I did not say that he had warranted them sound until the action was commenced. I took his word. A few days after the arrival of the horses I started off into Wales with the bay horse, and put up at different hotels. Had a roan horse, which was put in the same stable. He is alive and well now.

Joseph Smith, groom, formerly in the employ of defendant: Recollected going to plaintiff's. Plaintiff said they were a good, quiet pair of horses. Understood him to say they were sound. Met the horses at West Bromwich station on the 12th. The larger of the two sweated much. The next day, when driving into Birmingham, could not get them along. They stopped at Soho Hill. Had to stop several times going up Hockley Hill. Noticed a running at the nose of a yellow cast. Had to walk the horses back. Saw the first horse after it was opened. The liver dropped to pieces. The lungs, the man said, were almost gone. Two or three days after the second horse fell ill. He had a running at the nose. Mr. Collett, Mr. Stanley, and Mr. Bradley saw him, and under their directions he was killed on the 13th of July.—Cross-examined: Had had a great many years' experience, and thought the first horse was suffering from Influenza. The second black horse fell ill before Mr. Holden came back from his tour into Wales.

Thomas Parsonage, groom in the employ of Mr. Allen: Went with Smith to the station. Noticed the larger of the two sweating a great deal, and he coughed several times in taking him home. Saw him on the following Saturday. Noticed he was swollen under the jaws and running at the nose. Saw the second horse after he was ill. Seemed to be the same as the first,

with running at the nose and swollen neck. By the same train Mr. Jordan's horses came up.

Phineas Kendrick, farrier, Wednesbury: Called in on the 14th May, 1875, to see the large black horse. Found him very ill, and told Mr. Holden it was a very serious case of Influenza. Attended him till the Tuesday, when he died. He had a great running at the nose, of a yellow, nasty, filthy stuff. He was swollen at the glands of the throat. He was swollen on each side very much, and there were three swellings under the jaw. He was breathing very hard. Had seen about two cases of Glanders.—Cross-examined: The swelling at the glands of the throat was one of the symptoms of Influenza, and breathing hard was another.

Philip Howse, saddler, Hockley: Saw the horses when they pulled up at Hockley Hill. One had a discharge from the nose of a yellowish-green cast.

Harvey Collett, veterinary surgeon, West Bromwich: Was called in to attend the second horse on the 6th of June. Did not detect the disease at that time. Treated it as a case of chest disease. He had afterwards a running at the nose and swelling of the glands. One of the hind legs became very much swollen, and ulcers formed on the swollen limb and then on other parts of the body. Told the groom it was Glanders. The horse was killed. It was suffering from Glanders and Farcy. Had heard the evidence as to the first horse. Was of opinion that he died from Glanders. From the state he was described to have been in he must have been suffering some time—from one to three months, possibly longer. The bay horse died of the same disease. The stable would be affected.—Cross-examined: The disease is one of the most infectious nature. The woodwork of the stable should be destroyed. The disease is communicated by letting horses drink out of the same bucket or eat out of the same manger. The colour of the lungs of the horse would depend on the stage of the disease. If it was rapid the lungs would be of a darker colour than normal; if slow, it would be more like its normal colour—pink. The disease is contagious previous to the external manifestations.

The deposition of Albert Bradley, of Dudley, veterinary surgeon, who was a witness on the previous trial, and who had subsequently died, was read. He said: "I have had considerable experience in relation to Glanders in horses. In July, 1875, I was sent for to attend Mr. Holden's horse. It was a black gelding. I found it suffering from disease. The disease was Glanders and Farcy. I should think the disease had been in the system a couple of months at least. I ordered it to be killed. It was cut open in my presence. I found the lungs badly diseased with Glanders. There were miliary tubercles in the lungs. They were of old standing. There were ulcers in the nasal chambers and nostrils. I found Farcy buds all over the body. I considered it the worst case I ever saw. The hair on the mane and tail tumbled out when you caught hold of it. This arose from diseased liver—a consequence of Glanders. There were glanderous tubercles in the liver. These appearances assisted me in determining as to the duration of the disease. The appearance of the tubercles in the lungs change. I can tell by their appearance whether the disease is of long standing. It was so in this case. In my opinion the horse could not have been sound when he was bought on the 10th of May. I consider the horse was suffering from Glanders on that date. I heard the evidence of Joseph Smith and Phineas Kendrick, given at Welshpool, as to the first black horse. The discharge at the nostrils, the swelling of the glands of the throat, and the lumps under the jaw described by them, are symptoms of Glanders. A horse in the condition described by such witnesses could not have been sound eight days before his death. I should think not for a much longer period.—Cross-examined: I should say the first horse had suffered from Glanders two or three months.

Glanders is a highly infectious disease. The disease is first contagious when the horse has the seeds of the disease first in the system, and before it has arrived at the acute stage. The disease is most frequently communicated by letting horses drink out of the same bucket, or eat out of the same manger, or be stabled close enough to smell each other by rubbing each other's noses. Anyhow in which they could get the discharge on the mucous membrane. Under all or any of these circumstances it is possible for the disease not to spread, but it is probable it would—highly probable. Upon my oath I can swear that the horse I attended on the 10th of July had the disease two months before. Glanders supervenes upon other diseases, on Influenza, but not often on Pleurisy; but when it does the symptoms are more aggravated than when it does not. Supposing a horse having Influenza to be improperly physicked, that would be likely to turn to Pleurisy, Congestion of the Lungs, or Glanders. If a horse were improperly physicked it would not alter the internal appearance of the Glanders so as to prevent my telling the duration of the disease."

The Judge's notes of the evidence given on the former trial by Mr. Stanley, veterinary surgeon, who has also died, were put in and read.

John Woodroffe Hill, veterinary surgeon, Wolverhampton, who had heard the evidence of the previous witnesses, and the depositions and Judge's notes read, was of opinion that the first horse died of Glanders, and the second horse of Glanders and Farcy. From the appearance of the body, as described, he had no doubt the disease had existed for three months. —Cross-examined: Had a large establishment at Wolverhampton where they stabled thirty horses. Was never at Mr. Bryan's stables. Glanders was more contagious than infectious. Supposing the horses were in loose boxes, and they smelled each other, a healthy animal might contract it from a diseased one by that means. Wood, especially if dilapidated, readily absorbed fluid matters. Wood absorbed the contagion. Horses using the same buckets was not the most frequent means of conveying the disease. The most frequent means was by inoculation. The padding in a railway horse-box would absorb any discharge if new, but the rule was that the boxes were cleansed. From what he had observed in sending and receiving horses, he knew they were. Supposing a horse with Glanders had been put into the same horse-box a week before these were, it would be liable to take the disease if the box had not been cleansed and there was any discharge; but the boxes could easily be cleaned with carbolic acid and water. Mr. Holden could not have disinfected his stable so easily, if the fixtures were not iron and were dilapidated, as a horse-box could be disinfected. He did not know the construction of Mr. Holden's stables. If he did he could tell whether it was necessary to pull them down or not. If there was no discharge there would be less liability to communicate the disease.

George Fleming, veterinary surgeon (2nd Life Guards), said he had heard the evidence given and read. Had had a great deal of experience of Glanders in horses. Was certainly of opinion that the second horse had died of Farcy and Glanders, and thought it very probable that the first had also. Was certainly of opinion that the disease existed in the first horse for three weeks, and in the second for not less than three months.—Cross-examined: The percentage of infection is from 25 to 50 of the horses exposed. From the period of exposure to the development of the symptoms the earliest period is about nine days, but that is exceptional—the usual period is from a month to six weeks. It depends on the state the horse is in at the time of the infection. A horse out of condition and weak would be much more susceptible of contagion. A dose of aloes would not produce Glanders. Glanders is undoubtedly a specific disease. The duration of Acute Glanders was from four to ten or twelve days. A person not well

acquainted with Glanders might mistake it for Influenza. There was every likelihood that the first horse died from Glanders. The running at the nose and the swelling of the glands were not inconsistent with Influenza.

Mr. Swetenham shortly stated the case on behalf of the plaintiff, and called

William Davies Bryan, the plaintiff, who said he attended Shrewsbury fair in March, 1875, for the purpose of buying these horses. Had known the horses from colts. He met Mr. Cotterill, who had purchased the horses. He bought them from him for £160, and took them home. He never saw the slightest indication of disease in the horses. It was correct that he did say, "They are a good sound honest pair of horses." It was said when he was showing defendant the different horses. There were forty-five horses in the stables. They were away in the brake for perhaps an hour. He never made the statement a second time. When they came back he saw Mr. Holden and the others look them over. He saw no indication of running at the nose. They never had anything the matter with them. Mr. Holden came to see him about the 25th or 26th. He wanted another horse to match the one that died. He did not show him another then. He came again a second time. He said nothing about witness having warranted the horse. Bought a horse at Rugeley fair. Mr. Holden came to him about the 16th or 17th of June. Witness saw him. He came about a match horse for the one he had got. Witness showed him a black horse. He did not purchase it, because it was too small. He did not complain of the first horse, or say anything about a warranty. After the horses were sent away other horses were put into the same stalls. They did not catch anything. About a fortnight before Mr. Holden came, on the 10th of May, Mr. Jordan had bought a pair of horses. They were kept under the same roof, in adjoining boxes, separated by wooden partitions. They could rub noses. They were sent by the same train to West Bromwich. The horses sold to Mr. Holden were shown to Mr. Hetherington about a fortnight before.—Cross-examined by Mr. McIntyre: Could not fix a date when Mr. Holden first came in May. He was there three times in May. Was absent from home in May. Was present at the trial at Welshpool. There was nothing said about Mr. Holden's going to see another horse. Mr. Holden did come to see witness in June about a match horse. John Evans was present. He was at Welshpool.

Thomas Cotterill, horse-dealer, West Bromwich, said he sold the black horses to Bryan. Bought them at Shrewsbury from Mr. Price on the 9th of March, 1875. At that time they were very healthy and good. Sold them the same day.

Edward Price, tenant to Mr. Jones, ex-Sheriff of Montgomeryshire, took the horses to Shrewsbury fair. Knew them well. Had bred one of them. Had known the other since it was foaled. They were perfectly healthy.—Cross-examined: Had had no experience with glandered horses. There was no running at the nose. Could not say that the seeds of the disease might not have been in them.

Thomas Jordan, ironmaster, West Bromwich, said he bought a pair of horses at the same time as Mr. Holden. They came by the same train. The horses were very good ones, and had been so.

Thomas Hetherington, jobmaster and veterinary surgeon, London, said they kept eighty horses on the premises. Remembered going to Bryan's in May, 1875. Saw two black horses, and examined them with a view to buying them. Examined their mouths. Saw no symptoms of disease. They appeared perfectly right and well. They were not old enough for him. Bought three or four horses from Bryan, which were well at that moment. One black horse he bought stood next to Mr. Holden's pair.—Cross-exam-

ined: The disease might exist a short time before there were any outward symptoms.

John Evans said he had been in the plaintiff's service the greater part of his life. Had to feed these horses. Saw no symptoms of disease. They were very good feeders. Had never seen Glanders on the premises. The horses sold to Mr. Jordan were in the adjoining boxes. There was an opening in the partition between the two which the horses could get their noses through, and had seen them do so. There were about twenty-one horses on that side of the yard, and they were watered in the same buckets. When he came back from sending Mr. Holden's horses away he put some other horses in the same stalls. He did not cleanse them. They were the horses that were sold to Mr. Hetherington. Recollected Mr. Holden coming once when Mr. Bryan was not at home. He came some time after. Could not say how long. Showed him a black horse once, but would not say when it was. Recollected Rugeley fair. Mr. Holden came after Rugeley fair. Mr. Bryan was present. Did not recollect what took place.

James McCall, Professor of Veterinary College of Glasgow, and Inspector for Privy Council, said he had attended carefully to the evidence. Had heard the evidence with regard to the first black horse. (By the Judge: And with regard to their fate when they came home, and also the evidence of Mr. Bradley and Mr. Stanley.) Was of opinion that the symptoms of the first horse were consistent with Influenza. The *post-mortem* appearances were consistent with death from Influenza. Did not think the first horse died from Glanders.—Cross-examined: The second horse was labouring under Influenza, and died from Glanders. Had heard the evidence of Mr. Fleming, who was a gentleman of great reputation, and well known in his profession. —By Mr. Swetenham: Did not think the first horse died from Glanders, because there was no mention made of the peculiar condition of the glands of the throat, which was characteristic of Glanders. They had always miliary tubercules in the lungs. Was of opinion that the first horse died from Congestion of the Liver.—Cross-examination resumed: Had heard the evidence that the lungs were almost gone. Heard what Kendrick said about swelling under the jaws, and had heard what was said about the liver. The second horse died from Glanders. Influenza frequently terminates in Glanders. Had had frequent experience of its beginning with Influenza and ending in Glanders. The horse might have been suffering from disease on the 12th May. From the evidence he should conclude that he was labouring under Influenza when he was bought. The liver and the lungs could have got into the same state in half the time.

James McGavin, veterinary surgeon, said he knew the horses sold to Mr. Holden. Knew the boxes in which they were kept. Had known horses watered from the same pump. The disease would necessarily have extended to the other horses. Had heard the evidence of Mr. McCall. Agreed with him in everything.—Cross-examined: The second horse died of Glanders.

The learned Judge left it to the jury to say—1st, was there a warranty? 2nd, if so warranted, were the horses sound horses?

The jury found a verdict for the defendant, and awarded him £8 15*s.* damages, and the price of the horses. This sum is the total of the sums he had paid the veterinary surgeons, and one of the items in the defendant's counter-claim.

Army Veterinary Department.

Gazette, July 31.

ROYAL ARTILLERY.—The undermentioned Veterinary Surgeons on probation, to be Veterinary Surgeons :—J. D. Edwards, F. Smith.

VETERINARY DEPARTMENT.—The undermentioned Veterinary Surgeons to be Veterinary Surgeons of the First Class : J. Kettle, 19th Hussars ; F. Duck, Royal Artillery.

Gazette, August 14.

2ND LIFE GUARDS.—Veterinary-Surg. of the First Class G. Fleming, from the Royal Engineers, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class T. Hart, deceased.

6TH DRAGOONS.—Veterinary-Surg. J. Findlay, from the Royal Artillery, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class W. B. Walters, transferred to the Royal Engineers.

ROYAL ENGINEERS.—Veterinary-Surg. of the First Class W. B. Walters, from the 6th Dragoons, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class G. Fleming, transferred to the 2nd Life Guards.

SHROPSHIRE YEOMANRY CAVALRY.—Veterinary-Surg. T. Roberts resigns his commission.

Obituary.

THE death is recorded of Mr. Daniel Phillips, late of Penryn, who graduated May 19, 1826.

The sudden death, from an accident, of Mr. David Haig, M.R.C.V.S., of Shepley, Huddersfield, is reported. Mr. Haig was returning home at night on July 12th, from attending a patient, when his horse took fright at a large stone, and backed the carriage over a wall into a grass field,—a depth of nine yards ; Mr. Haig's neck was broken in the fall, and his body was not found until next morning. He graduated April 16th, 1869, and was much respected by a large circle of clients and acquaintances. He was a member of the Society of Friends.

Notes and News.

GLANDERS IN IRELAND.—The Irish Privy Council has recently repealed an order made nine years ago, in reference to the care of horses, mules, or other animals affected with Glanders or Farcy, and has issued a much more stringent one. One of the clauses of the new order directs that, when an animal dies of Farcy or Glanders, or is slaughtered because it suffers from either disease, the carcase shall be buried whole at least six clear feet below the surface of the place of interment, with at least one foot of roche or quicklime beneath the carcase, and two feet of such lime immediately above all its parts. Immediately before such burial, the hide or skin of the carcase shall be slashed or gored from the upper part to the extreme lower part by incisions through it of not more than six inches distant one from the other.

DOG TAX IN ENGLAND AND SCOTLAND.—From a return ordered by the House of Commons on the motion of Sir George Douglas, it appears that the number of dog licences taken out in England and Wales during the year

ending December 31, 1876, was 1,209,490, yielding in revenue £302,572 10*s.*; in Scotland the number was 152,686, yielding £38,171 10*s.* There were in England and Wales during the year 7696 prosecutions for keeping dogs without licence, instituted at a cost of £3515, and in Scotland 577 prosecutions, costing £372. In the year ending April 5, 1876, there were 407,072 dogs assessed in England and Wales, and 38,584 in Scotland; the revenue accruing in the former country was £244,064, and in Scotland £23,109.

PORTABLE FOOD FOR HORSES.—The *Journal de Saint Pétersbourg* furnishes the following details regarding the preserved food for horses, prepared in the event of a scarcity of oats, or in case the transport of the food as used at present should prove too difficult. This food is composed of pounded oats and grey-pea flour, mixed with hempseed oil and salt. The paste obtained by this mixture is then cut up into thick cakes of about four inches in diameter, pierced with small holes to assist the soaking in water. On being taken from the oven these cakes are strung upon wires, so that each wire holds the daily ration for a horse. Each ration, of the weight of four pounds, is equal in nutriment to ten pounds of oats. It is stated that the horses are extremely fond of these cakes, whether soaked in water or quite dry; and although when fed exclusively on these cakes they become thinner in appearance, they do not lose any of their strength, though hard worked.

HORSEFLESH.—During the first six months of 1877 the butchers who deal in this commodity in Paris have delivered to consumption 5283 horses, donkeys, and mules, which furnished 959,730 kilos. of meat (net). During the corresponding period of 1876 the number of these animals was 4422, which gave 803,500 kilos. The increase is, therefore, of a marked character. The persons who endeavoured to popularise the use of horseflesh affirm that it is more wholesome and more nourishing than beef, although often not quite so agreeable. Paris contains more than 50 butchers' shops specially devoted to this article. A very good pot-au-feu may be made with the inferior morsels at the price of 25 c. and 30 c. the lb. The choicest pieces—fillet, undercut, etc.—are much higher in their cost.

SERIOUS MORTALITY AMONG HORSES.—A mysterious epidemic, which has carried off Baron Rothschild's well-known horse Restitution, together with a valuable brood mare, has, according to the daily papers, caused the death of Favonius. The disease, which suddenly appeared in the Crofton stables at the commencement of August, appears to be Typhoid Fever, but both London and local veterinary surgeons have as yet been unable to ascertain the exact nature of the malady. Favonius was valued at £12,000.

TUBERCULOSIS IN CATTLE.—In Bamberg, a veterinary inspection is made of the live stock sent there for slaughter, from which an estimate is formed of the comparative frequency of disease in animals destined for butchers' meat. From the report of the local inspector published in the *Beiträge zur Veterinär-statistik*, it appears that of 5058 beasts, 6641 calves, 2791 sheep, 8614 swine, and 15 young wild boars, recently passing under his hand, 31 animals only were confiscated by the police. Between 1863 and 1876 the sale of 578 beasts was prohibited, 173 of which were suffering from Tuberculosis. Of these, 124 were between 1½ and 6 years old, and 20 between 6 and 10 years of age. The total number of full-grown beasts slaughtered within the period named was 49,894, so that the proportion in which Tuberculosis was present is one-third per cent. only.

ANTHRAX IN AUSTRALIA.—"Cumberland disease," it is said, is now affecting cattle and horses as well as sheep in New South Wales. Attention is being directed to the subject through diseased animals being brought to market.

Correspondence, etc.

ARE CLASSICAL EDUCATION AND SCIENTIFIC ATTAINMENTS TO BE CONSIDERED THE END AND AIM OF VETERINARY STUDIES?

To the Editor of the VETERINARY JOURNAL.

SIR,—It would appear to be the absorbing idea in the minds of some of those who aspire to the position of leaders of thought in our profession, that the grandeur and greatness of our future rests, not chiefly, but entirely on the high classical education and scientific attainments of all those who are to become one day members of our common profession.

It is a fact fully admitted, that education pervades all classes now to a much greater extent than was ever the case before; and for any learned profession to hold its own, it is obliged to be more and more profound in its knowledge. The immense value of the discoveries of scientific research—discoveries revealed by other discoveries previously made—none will deny; but I wish respectfully to suggest that it is not true wisdom to make it a hobby-horse, and to ignore the importance and the claims of that practical knowledge which all experience testifies to be of intrinsic worth,—nay, which is admitted on all hands to be of incomparably more importance in our special profession than any other kind of knowledge.

If by my possessing a classical education and scientific attainments, I am enabled to diagnose disease more correctly, and treat my patient better than the less educated man can, *then it must follow* that I can restore the sick and lame horse to usefulness and to health sooner and with more certainty. The public are never slow to discern this; and the natural result will, nay, *must*, follow, that the highest educated man will be the most sought after, will have the largest amount of confidence placed in him, and will have the largest practice in every town or country. Now, if this kind of education does produce these results, then I say by all means let the whole country be determined to have it; but if, on the contrary, there is any doubt about it, if experience shows that in the vast majority of such men when they come face to face with the world, when they have to grapple with the realities of life, to live by their profession, then they prove a failure,—when the Professors themselves condemn it in many of its aspects, especially as to materia medica, botany, etc., etc., and as one of its learned professors lately freely admitted to me that notwithstanding that we teach every branch of science which appertains to our profession much more deeply now than was ever done before, notwithstanding we have a much larger staff of teachers, have a greater number of subjects and lectures daily, besides private classes and private instruction, still I hesitate not to say that the average number of practical men we turn out now is not in the same ratio to what the average number was fifteen years ago. Now if this be true (and I feel constrained to believe it), then I say *there is something radically wrong in the method of teaching our student*, and it is our bounden duty to agitate, agitate, agitate until it is altered and corrected. Import a little more science into your teaching, eradicate a little more of the practical instruction, and in another fifteen years you will have none of the practical element in the education. Young men with such an education, having passed the requisite time at College, and having gained their diploma, will have to do as one of my fellow-students said nearly forty years ago—viz., he would go and buy himself a pair of phlemes and a searcher, and learn how to use them. Such a one might be a gentleman, and come up to the requirements of my friend Tom Taylor's caricature of an ornamental veterinary surgeon; he will have to practise

many years, and as our friend the late John Lawson used often to say, "such a one will have to fill many a field with carcases before he will have acquired sufficient experience to be fit to be entrusted to treat valuable horses." Let me ask, if a high education alone can make clever surgeons, must it not follow that the human surgeon must be clever? He is educated, as a rule, far higher than the veterinary surgeon; he has been instructed in anatomy, physiology, materia medica, chemistry and botany, to a far greater degree than we have; but yet, whenever he tries his hand with the horse patient, he can never diagnose disease or lameness correctly, and his treatment is always grossly at fault. The veriest stableman or horsekeeper of sense and experience is more correct in his opinion, and may with much more safety be entrusted with the care of sick or lame horses. The man who possesses a thorough practical knowledge and a sound education reaps the advantage of it throughout his after life; but the man who advocates classical education alone, and scientific attainment alone, in order to secure the highest attainable object of our noble profession, should be told, as Festus told Paul, "Thou art beside thyself; much learning doth make thee mad."

Yours obediently,

Manchester. THOMAS GREAVES, F.R.C.V.S.

HORSE DEALERS AND VETERINARY SURGEONS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In this month's *Journal* I see some remarks by Mr. Lambert as to the conduct of the Ashurst Lodge Company reserving the right to refuse examination by certain veterinary surgeons.—If oft-repeated report speak truly, they are not the only dealers who similarly object,—some of the London ones do so; and report goes further, and says that *certain* dealers approve very much of *certain* veterinary surgeons examining their horses, counting pretty surely of a successful passage through the process. All honour be given to those gentlemen who are outside the patronage of the dealers: it clearly tells its own tale, *unless* (and this brings me to your observations under "Correspondence"), the "unhealthy and incompatible combination" of horse-dealer and veterinary surgeon exists, then it can be well understood how the dealer should take objection to such a person. I trust, Mr. Editor, that when steps are being taken to protect our profession from impostors, similar ones may be adopted to strike off the rolls all members who so prostitute their calling. In conclusion, I think our Twickenham brother is to be commended for his candour, and I would suggest that all those who, like him, wish to, and do carry on the trade of a horse-dealer, but lack the honesty to announce it, should follow his example; they can then form a general "Lodge," and become a "buttering" Company, by which the objections to "certain veterinary surgeons" will be overcome, and *we*, who have some professional pride, may escape the taint of collision.

I am, Sir, your obedient servant,

HENRY DYER.

Knightsbridge, *August 1st*, 1877.

THE FELLOWSHIP DEGREE.

To the Editor of the VETERINARY JOURNAL.

SIR,—The letter from Mr. W. Furnivall, in your last month's *Veterinary Journal*, bearing upon the above subject, requires an indignant refutation

on my part, as to the "*favouritism*" imputed to the President of the Royal College of Veterinary Surgeons towards me. We are personally unacquainted, and have only met, to my knowledge, on one occasion—five years ago, when Colonel Fitzwygram was pointed out to me, but we were not even introduced. Is it not surprising that, after having received so high an education as Mr. Furnivall informs us he has, he should allow himself to entertain an idea so degrading; or that he should give vent to such rude and unwarrantable assertions regarding myself (a perfect stranger) as are conveyed in the last paragraph of his letter? Further comment is needless.

I remain, yours faithfully,

BENJAMIN H. RUSSELL, M.R.C.V.S.,
(Captain late 13th Bengal Lancers).

Grantham, *August 2nd*, 1877.

ANSWERS TO CORRESPONDENTS.

J. VAUGHAN. Leyh's "Handbuch der Anatomie der Hausthiere" is the text-book of some of the German schools. The second edition was published in 1859, and comprises about 600 pages, with 230 woodcuts. The latter are fairly good, and it is copies of them which illustrate Strangeway's "Veterinary Anatomy." The price, we think, is about twelve shillings. Zundel and Meynard published a French translation in 1870. Lecoq's "Traité de l'Extérieure du Cheval et des Principaux Animaux Domestiques"—the third edition of which was published in 1856—is, as its name indicates, a work on the external conformation of animals. It is very elementary, consists of about 500 pages, and has 155 good illustrations of the exterior of animals. The price is nine shillings.

Communications from several correspondents are unavoidably pressed out of this month's issue. They will appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from W. G. Schofield, Pontefract; T. Greaves, Manchester; Hy. Dyer, London; W. A. Taylor, Manchester; J. Vaughan, Edinburgh; A. Johnston, Edinburgh; B. Cartledge, Sheffield; E. Decroix, Principal Veterinary Surgeon, Paris; W. H. Coates, London; J. D. Allman, London; Captain Russell, Grantham; J. Macqueen, Glasgow; J. T. King, Bournemouth; J. Cooper, Brighton; R. Moore, Sheffield; W. Dacre, Altrincham.

BOOKS: *M. H. Hayes*, Veterinary Notes for Horse-Owners: an Every-day Horse Book; Annual Announcement of the Montreal Veterinary College; Prospectus of St. Thomas's Hospital Medical School; ditto of Edinburgh Royal Veterinary College; *C. F. Müller*, Die Rinderpest in Deutschland Während des ersten Quartals 1877.

JOURNALS: *American Veterinary Review; Recueil de Méd. Vétérinaire; Archives Vétérinaire; Archivio di Medicina Veterinaria; Wochenschrift für Thierheilkunde und Viehzucht; Edinburgh Medical Journal; Practitioner; Lancet; British Medical Journal; Journal de Méd. Vétérinaire et de Zoötechnie; Revue Vétérinaire; Journal of the National Agricultural Society of Victoria; La Veterinaria Española; Thierarzt.*

NEWSPAPERS: *New York Sportsman; North British Agriculturist; Farmer; Mark Lane Express; Agricultural Gazette; Free Press; Melbourne Argus* (2 copies); *Melbourne Age; Daily Telegraph; Rod, Forest, and Stream; Rod and Gun; Chicago Field; New York Herald.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.